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ABSTRACT

A study examined the knowledge and job skills required of persons employed in air pollution control (APC)-related occupations in Italy's public service sector. First, Italian legislation on APC and the functions/powers of Italy's public agencies responsible for APC were reviewed. The organization/operation of the public structures involved in environmental protection (EP) were analyzed in terms of four main areas of activity: policymaking, research/consultancy, inspection/control, and information/guidance. Data from interviews of a total of 18 persons from central authorities, research institutions, and regional/local authorities involved in EP/APC were used to develop occupational profiles and an overview of the activities/functions of public service sector employees in the field of EP/APC and the organization/structure of Italy's environmental education and training system. It was discovered that, despite their strongly hierarchical structure, Italy's EP/APC organizations do not divide tasks rigidly among their employees, and specific academic qualifications are not always required for access to the various APC-related posts. Training provision was often inadequate; however, awareness of the problem appeared widespread, and efforts to improve/expand the system were being planned/implemented. (Appended are a table detailing the organization/functions of Italy's public sector agencies responsible for EP/APC and the survey questionnaire.) (MN)

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Occupational structures and profiles in Italy in the field of environmental protection in the public service sector with reference to air pollution control

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Occupational structures and profiles in Italy in the field of environmental protection in the public service sector with reference to air pollution control

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Rome, October 1991

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Foreword

Since the Single European Act creating the legal basis to establish a Single European Market came into effect on 1 July 1987, environmental protection has come under the decision-making sovereignty of the EC. A wealth of EC directives has been passed on environmental protection since then, which Member States are obliged to adopt in their national legislation. Consequently, environmental policy in the EC is constantly taking in more and more spheres and gaining more and more importance.

The public sector in the Member States in particular is concerned with the implementation of these normative regulations and the additional legal rules applicable in the individual States. The most important task in environmental protection falls to them since they not only have to perform their own work but are also responsible for seeing that the private sector complies with all the statutory regulations. At the same time they are called on to influence and support all those who are or should be taking environmental protection issues into account.

As a result, more and more people are being employed in the public sector in the Member States to deal with environmental protection matters and the spectrum of qualifications required is becoming more and more demanding and differentiated.

This is also why CEDEFOP did not manage to fulfil its original intention within the framework of this project and was unable to cover the entire field of environmental protection in the public sector. Instead, working together with the research team from four Member States (D, FR, IT, UK), we restricted ourselves exclusively to air pollution control. The volume of the national studies on this aspect alone shows how many additional studies still need to be conducted in order to examine the occupational profiles in the field of environmental protection in the public sector.

In the work CEDEFOP has conducted so far, a number of Member States and most of the industrial and agricultural sectors have not even been dealt with*.

For the above reasons we would hope that other organizations might be prompted by these studies and the subsequent synthesis report to conduct further national and transnational analyses of qualifications on their own. This is very important if European cooperation and networking of environmental protection projects are to be stepped up and extended.

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*See "Occupational and qualification structures in the field of environmental protection in the metal and chemical industries", D, IT, UK and synthesis report, CEDEFOP, 1991.

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GLOSSARY OF ABBREVIATIONS

AGAI	Associazione guide alpine italiane - Association of Italian Alpine Guides
ANCC	Associazione nazionale controllo combustione - National Association for the Control of Combustion Processes
CIPE	Comitato interministeriale programmazione economica - Interministerial Committee for Economic Programming
CNR	Consiglio nazionale delle ricerche - National Research Council
DG	Direzione generale - Directorate-General
DPCM	Decreto Presidenza Consiglio Ministri - Prime-Ministerial Decree
DPR	Decreto Presidenza Repubblica - Presidential Decree
DM	Decreto ministeriale - Ministerial Decree
EIA	Environmental Impact Assessment
ENEA	Ente nazionale energia e ambiente - National Research Institute for Energy and Environment
ENI	Ente nazionale idrocarburi - National Agency for Hydrocarbon Fuels
ENPI	Ente nazionale prevenzione infortuni - National Agency for the Prevention of Accidents
IRI	Istituto per la ricostruzione industriale - Institute for Industrial Reconstruction
ISPeSL	Istituto superiore prevenzione e sicurezza del lavoro - National Institute for Preventive Measures and Health and Safety at Work
ISS	Istituto superiore della sanità - National Health Institute
PMP	Presidio multizonale di prevenzione - Multizonal Preventive Measures Office
RM	Roma
SIAR	Servizio inquinamento atmosferico e aree a rischio - Department for Air Pollution and High Risk Areas
SSN	Servizio sanitario nazionale - National Health Service
USL	Unità sanitaria locale - local health unit
VT	Viterbo

INTRODUCTION

This study forms part of a wider research programme being conducted for CEDEFOP and aimed at establishing a common occupational classification at European level.

A set of studies on "Occupational and qualification structures in the field of environmental protection in the metal and chemical industries" has already been carried out for CEDEFOP in France, Germany, the UK and Italy.

The present programme, in which Spain is participating in addition to the four countries referred to, examines occupations in the public sector concerned with air pollution and climatic changes.

The first chapter of this study reviews Italian legislation on the prevention and control of air pollution, and describes the functions and powers of the various public agencies, distinguishing between three organisational levels: the central authorities, the research institutions and the local authorities.

Chapter 2 briefly describes the organisation and operation of the public structures involved in environmental protection; the respective powers and functions are analysed in terms of four main areas of activity: policy-making, research and consultancy, inspection and control, and information and guidance.

Chapter 3 presents the public sector structures chosen for study, giving grounds for their selection, in the context of the organisational levels and functions described in the previous chapters.

Chapter 4 presents the case studies and interviews with personnel identified as significant in the context of the structures selected for study.

Chapter 5 sets out the tasks, skills and occupational profiles identified in the case studies. Details of the occupational profiles are then given in tabular form.

The sixth and last chapter gives an up-to-date overview of environmental education and training activities in Italy. The trends and outlook in this area are then discussed, with special reference to the development of new skilled occupations.

Annex I sets out the organisational levels and functions of the public sector institutions responsible for environmental protection (identified in chapters 1 and 2) in tabular form, indicating the departments selected for study (as listed in Chapter 3).

The questionnaire checklist used for the interviews will be found in Annex II.

CHAPTER 1

UPDATING OF ITALIAN LEGISLATION ON AIR POLLUTION CONTROL

In Italy, the legislative provisions governing atmospheric pollution are of fairly recent origin.

The principal instrument is Presidential Decree 203(1988), incorporating EEC Directives 779/80, 884/82 and 360/84. The Decree was updated by the Ministerial Decree of 20 May 1991, which may be considered as an implementing law regarding the collection and processing of data and information originating from private individuals, scientific institutions, etc.

The other two important laws in this area date from the sixties and seventies: Presidential Decrees 615/66 and 616/67, relating respectively to the regulation of heat-producing plants and fuels and the transfer of certain powers and functions from the central authorities to the regions and local authorities. While neither of these two laws incorporated Community legislation, they filled important gaps in national law. Certain aspects of these laws are still in effect - e.g. the establishment of Regional Air Pollution Control Committees (CRIAs); regulatory powers with regard to plant, including right of access; the territorial jurisdiction attributed to the fire service authorities at provincial level, etc.; the remainder, however, have been replaced by more modern provisions, which will be discussed later.

An examination of Italian environmental legislation - and specifically that relating to atmospheric pollution - reveals fairly heterogeneous fields of competence. This is the consequence of the hectic legislative activity of recent years, which was due largely to the need to tackle emergencies resulting from accidents or pollution on a massive scale.

The first phase, from the seventies to the mid-eighties, was marked by a growing awareness of environmental problems; however, it proved impossible to coordinate activities at different institutional levels.

In the second phase, which began with the adoption of law 349/1986 establishing the Ministry of the Environment, the Government sought to tackle the problem through a series of targeted measures, such as the rehabilitation plan for the Venetian Lagoon, the Lambro-Seveso-Olona reclamation plan, etc.

In this period noteworthy results were obtained as regards the completion of the legislative framework, and investment and financing; the same cannot be said, however, regarding the management of the various agencies concerned with environmental protection, which lacks coherence and effectiveness.

The third phase - yet to be implemented - will concern "production compatibility"; by this is meant the avance examination of the methods, technologies and substances concerned in production processes, before any damage is caused to health or the environment.

Clearly, this is a very ambitious objective given the relative lack of coherence of the existing public administrative structure.

In the second chapter we shall describe the procedures followed in executing the various administrative functions and directives, and the numerous powers available to the authorities in respect of air pollution control.

There follows a catalogue of the functions and powers of the various agencies involved in this area: i.e., the central authorities, research institutes and local bodies (see also Annex I, in which this information is given in tabular form).

It should be noted that the functions and powers of the various public agencies concerned with atmospheric pollution derive mainly from the following instruments:

- Presidential Decree (DPR) 203/88 on the implementation of EEC Directives 779/80, 884/82, 360/84 and 203/85 concerning air quality standards with respect to specific pollutants and the combating of air pollution from industrial plants, within the meaning of Article 15 of Law 183 of 16.04.87;

- the Prime-Ministerial Decree (DPCM) of 21.07.89 on guidelines for the regions regarding air quality standards and specific pollutants emitted by industrial plants;

- the Ministerial Decree (DM) of 08.05.89 on emissions of certain pollutants from large combustion plants.

Other legislative provisions will be referred to from time to time in the course of the study.

1.1 THE CENTRAL AUTHORITIES

The Ministry of Industry

1. authorises the operation, in accordance with legislation in force, of thermoelectric generating stations, refineries and fossil fuel storage facilities;
2. issues enforcement notices and warnings to ensure that emissions from thermoelectric generating stations and refineries conform to the limits laid down by law;
3. in the absence of provisional authorization by the region concerned (see point 49), carries out preventive checks regarding conformity with legal emission control standards in respect of thermoelectric generating stations and refineries;
4. issues warnings to refineries and thermoelectric generating stations and orders the suspension of the authorised activities for specified periods;
5. revokes authorizations and orders plant closures in respect of thermoelectric generating stations and refineries;
6. publishes applications for new plants and measures relating to existing plants;
7. transmits to the Ministry of the Environment proposals for Presidential Decrees on air quality limit values and guidelines.

Ministry of the Environment

8. In cases where the region concerned fails to authorise the construction of new industrial plant (except for thermoelectric generators and refineries) within sixty days from the submission of the related application, the Ministry of the Environment is empowered to issue the required authorization within the thirty days following the expiry of this period.
9. The Ministry issues decrees regarding minimum and maximum values and guidelines for the emission of pollutants, which also apply to thermoelectric generators with a capacity of 50 MW or over and the following:
   - desiccators and heat-treatment ovens;
   - post-combustion plants;
   - catalytic cracking catalysers;
   - chemical reactors;
   - coke furnaces;
   - blast furnace stoves, etc. (Ministerial Decree of 08.05.89).

   The following are excluded: all thermal plant not involved in industrial production, such as heating, air conditioning or sterilisation plants, etc. (Presidential Decree of 21.07.89).
10. The Ministry transmits proposals (jointly with the Ministry of Health) to the Ministry of Industry for the authorization of pollution abatement projects relating to thermoelectric generating stations, on the basis of opinions expressed by an appropriately constituted working group (Procedural agreement, Official Gazette n° 161 of 12.07.89);
11. expresses opinions on the authorizations referred to under point 1;
12. formulates proposals regarding the enforcement notices and warnings referred to under point 2;
13. formulates proposals regarding the warnings and suspensions referred to under point 4;
14. formulates proposals regarding the revocation of authorizations and plant closures referred to under point 5;
15. receives data on pollution transmitted by the regions (suspended particulates);
16. formulates proposals in Cabinet, in conjunction with the Ministries of Industry and Health, for Prime Ministerial Decrees fixing limit values and guidelines for air quality throughout the national territory;
17. fixes more stringent limit values in special cases;
18. issues decrees regarding sampling, analysis and evaluation methods for pollutants and fuels, in conformity with proposals by the National Health Institute (ISS);

19. issues decrees regarding the identification of the "best available technologies";
20. establishes criteria for the formulation of regional environmental protection and air pollution control plans;
21. establishes criteria for the collection of data on air quality, on the basis of regional monotoring systems.

The Ministry of Health

22. expresses opinions on the authorizations referred to under point 1;
23. acts in concertation with other authorities regarding the enforcement notices and warnings referred to under point 2;
24. idem regarding the warnings and suspensions referred to under point 4;
25. idem regarding the revocation of authorizations and plant closures referred to under point 5;
26. receives the data referred to under point 15;
27. transmits proposals to the Ministry of the Environment for Presidential Decrees fixing limit values for air quality and air quality guidelines.

1.2 THE REGIONAL AND LOCAL AUTHORITIES

The regions

28. issue authorizations for all industrial plants (with the exception of thermoelectric generating stations and refineries) within sixty days from the submission of the related application; otherwise the necessary authorization is issued by the Ministry of the Environment (see point 8);
29. fulfil administrative functions in respect of the CRIAs (Regional Committees on Atmospheric Pollution) (Presidential Decree 616/77). These latter express opinions regarding decisions to be made by local authorities on questions of atmospheric pollution, and promote studies, research and other initiatives (Presidential Decree 615/66);
30. prepare reports for the Ministry of Industry in the event that limit values for atmospheric emissions are exceeded;
31. transmit opinions to the Ministry of Industry regarding new refineries and thermoelectric plants;
32. transmit the data referred to under point 15;
33. formulate plans for the collection of data on pollution;
34. draw up a regional inventory of emissions to atmosphere;

35. fix air quality limit values at levels within the range and in conformity with the guidelines established by the Ministry of the Environment;
36. in the event that the Ministry fails to fix the aforementioned limit values, or their establishment is delayed, the regions are empowered to issue authorizations having in mind the criteria and indications transmitted by the relevant CRIA and other authorizations issued earlier for similar plant (Presidential Decree of 21.07.89);
37. establish emission limit values for plants on the basis of the "best available technologies" (see point 19);
38. fix the more stringent limit values for areas of particular environmental interest or heavily polluted areas;
39. carry out checks on the implementation of air pollution control measures before issuing authorizations for the construction of new plants;
40. make public the details of the conditions attaching to authorizations;
41. take decisions regarding authorizations for new plant in the case of proposed modifications (after sixty days the Ministry of the Environment is empowered to decide the matter);
42. request opinions from the mayor of the municipality concerned by applications for authorizations for new plants;
43. are empowered to issue enforcement notices in cases of plants exceeding the emission limits laid down by law;
44. are empowered to issue warnings to the owners of plants in cases of failure to comply with the terms of enforcement notices;
45. are empowered to issue warnings and temporarily revoke authorizations;
46. in cases where this power is exercised, the region in question must submit a report to the appropriate ministries;
47. adapt the provisions of authorizations in the light of technological changes;
48. authorize existing plant to commence production following the submission of an application, after carrying out checks to ensure compliance with the limits laid down by law and identify technical modifications to the plant;
49. issue authorizations relating to substantial modifications to existing plants;
50. make public the details of applications for authorization;

51. carry out tests using gravimetric analysis and the "black smoke" method at representative locations in their territory and communicate the results periodically to the Ministry of the Environment. They identify sources of pollutant emissions in plants, calling on the technical services of the appropriate municipalities and provinces.

The local authorities

52. exercise administrative powers through the public health services of the Local Health Units to ensure control of air pollution deriving from heat-producing plant and motor vehicles (Presidential Decree 616/77);
53. take part, through the public health services of the Local Health Units or the monitoring stations operated by the Multizonal Preventive Measures Office, in monitoring air pollution deriving from industrial establishments;
54. issue building permits for the construction of new plant (industrial plant, thermoelectric generators and refineries);
55. on the basis of comments and compatibility studies by the public health services, they transmit to the regions their opinions on applications for authorizations relating to new plant (except for thermoelectric plant and refineries);
56. take note of opinions expressed by the Ministries of the Environment and of Health regarding the construction of new thermoelectric generating stations and refineries.

The provinces

57. The provincial authorities are responsible for the monitoring and control of emissions deriving from industrial plant (Presidential Decree 616/77), and heat-producing plant and the related fuels (Presidential Decree 615/66), calling on the monitoring services, the health institutes and the provincial fire services for monitoring and periodic checks;
58. nominate committees which, on the authority of the appropriate Regional Air Pollution Committee, carry out on-the-spot compliance control checks on industrial establishments (Presidential Decree 615/66);
59. draw up inventories of atmospheric emissions in their jurisdictions.

1.3 THE RESEARCH INSTITUTIONS

ENEA (Ente nazionale per l'energia e l'ambiente - National Research Institute for Energy and the Environment)

This body acts as consultant and carries out studies, research and experiments in the following areas:

* nuclear safety and health protection against the effects of ionizing radiation;
* protection of the environment against emissions from thermoelectric generating stations fuelled by oil, coal or gas;
* renewable energy sources and energy saving;
* consultancy vis-a-vis the government (Ministries of Industry and the Environment) and approval of projects regarding the establishment of power generating plant.

ISPeSL (Istituto superiore per la prevenzione e la sicurezza del lavoro - National Institute for Preventive Measures and Safety at Work)

This body, a government technical and scientific institute, has various research and advisory tasks vis-a-vis the central authorities, the regions and the USLs relating to the approval of machinery, plant and products, and the prevention of accidents and occupational diseases. The institute is also concerned with the prevention of major accidents (Presidential Decree 175/88) and pollution outside industrial establishments.

ISS (Istituto superiore di sanita - National Health Institute)

This body is a government technical and scientific institute which carries out research and experiments and provides advice to the central authorities, the regions and the USLs in the following areas: food hygiene, pharmaceuticals and toxicology, environmental health, etc., in addition to environmentally sound land-use and ecotoxicology.

CHAPTER 2

THE ORGANISATION AND FUNCTIONING OF THE PUBLIC AUTHORITIES IN THE AIR POLLUTION SECTOR

2.1 DECISION- AND POLICY-MAKING LEVEL

Authorizations and legal provisions

The related powers are exercised by:

* **The Ministry of the Environment**, which fixes, for all industrial plant (with the exception of heat producing plant not involved in industrial production), the minimum and maximum values for pollutant emissions; more stringent limit values for special cases; and methods of sampling and analysis. It also defines the "best available technologies".

* **The Ministry of Industry**, which issues authorizations for thermoelectric generating stations and refineries for the production of energy and the processing of fossil fuels. Authorizations may be revoked if the technologies employed do not conform to legal provisions in force or the limit values laid down for emissions are exceeded. The Ministry is also empowered to issue **enforcement notices and warnings** (regarding which further details will be given below in relation to the regions), **suspend activities** already authorised, **revoke authorizations** and order the **closure of plants**.

* **The regions**, which authorize the construction of new plant or the entry into operation of existing plant where an application has been submitted relating to proposals for substantial modifications designed to contain pollutant emissions within prescribed limits.
  The regions are also empowered to authorise entry into production in cases where the Ministry of the Environment has not fixed the related limit values for air quality; in such cases the regicnal authorities base their decision on the criteria followed in respect of similar plants already in operation.
  In addition the regions are empowered to issue **enforcement notices** (obliging the operator to carry out modifications or technical changes to plant which inspection has shown to be polluting or dangerous) or **warnings** (a legal formality entailing penalties in the event that the operator fails to comply with the terms of the notice), or order the **temporary revocation of the authorization** in question.

* **The local authorities**, which issue building permits for the construction of new plants, whether thermoelectric generators, refineries or industrial plants are involved.

Concertation

This expression is intended to describe the collegiate character of the procedure leading to decision-making or the issue of legislative instruments which is obligatory for Ministries, regions and local authorities under many anti-pollution laws. In the last resort, decisions are always taken by a single agency which assumes the related responsibility; however, the opinions (and powers) of other Ministries cannot be ignored. These opinions are not binding in law, but in practice the authority making the final decision never departs from the consensus view since to do so would imply that it assumed sole responsibility for provisions which are often costly and unpopular. Details of this procedure are given below.

The authorization of pollution abatement projects relating to thermoelectric generating stations:

* Decision by the Ministry of Industry;
* Opinion/proposal by the Ministries of the Environment and Health, and the region concerned.

Authorization for new thermoelectric plants and refineries to come into operation:

* Decision by the Ministry of Industry;
* Opinions by the Ministries of the Environment and Health, and the region, which calls for an opinion from the mayor of the municipality concerned.

No authorization for any type of plant is granted definitively or without close examination. In clearly defined cases and circumstances authorizations are granted only if the firm's application conforms to legal provisions in force; authorizations may be suspended or revoked in cases where the firm's management fails to comply with the conditions imposed by the Ministry or the region. The procedure then adopted is described below.

Enforcement notices, warnings, suspension or revocation of authorizations and plant closures in respect of thermoelectric generating stations and refineries:

* Decision by the Ministry of Industry;
* Proposal by the Ministry of the Environment in concertation with the Ministry of Health.

In the case of existing plant, the regions are empowered to act if emission levels exceed legal limits. They may also warn plant operators who fail to comply with the terms of enforcement notices or revoke the authorization to enter into operation.

Where a region intends to exercise these powers it must so inform the Ministries of Industry and the Environment.

The regions issue authorizations to commence operation in respect of existing plant after ascertaining their compliance with the limit values laid down by law and identifying any modifications made to the plant.

Determination of limit values and guidelines for air quality:

* Proposal by the Ministries of Industry, Health and the Environment.

Authorization to build new industrial plant (except thermoelectric generators, refineries and fuel storage facilities):

* Decision by the region concerned;
* Opinion by the municipality concerned and the competent Ministries.

Issue of a Prime-Ministerial Decree fixing limit values and guidelines for air quality throughout the country:

* Proposal submitted to the government by the Ministry of the Environment, in concertation with the Ministries of Industry and Health.

Determination of sampling, analysis and evaluation methods in respect of pollutants and fuels:

* Decree issued by the Ministry of the Environment on a proposal by the Ministry of Health.

Issue of a decree specifying the "best available technologies", to which any modifications to dangerous or polluting plant must conform:

* Decree issued on the responsibility of the Ministry of the Environment;
* The regions adapt their rules in line with the new technologies.

Determining the criteria for the formulation of regional plans for environmental rehabilitation, air-quality protection and data collection:

* Responsible agency: Ministry of the Environment.
* The regions have the following tasks:
  - drawing up a report giving data regarding cases where limit values for the emission of pollutants (suspended particulates) have been exceeded (the relevant data are transmitted to the Ministry of Industry solely in the case of thermoelectric generators and refineries);
  - formulating plans for data collection regarding pollutants and preparing an inventory of pollutant emissions.

Power of substitution

This a legal concept which is in a sense the opposite of "concertation". It comes into play in cases where a decision-making power - on which the application of important provisions depends - has not been exercised within the prescribed time, reducing the provisions in questions to mere statements of principle; in such cases, the default is made good by the higher authority competent in the matter (the contrary can also occur, however, as we shall see).

Intervention of this kind is designed to alleviate problems arising in connection with the time limits attaching to legal provisions which concern (though not exclusively) regions and local authorities called on to take urgent decisions regarding problems of environmental pollution or the requirements of industry.

In practice, the power of substitution is exercised in the following manner:

Authorization for the construction of new industrial plant (except for thermoelectric plant and refineries):

* The region concerned must transmit its opinion to the Ministry of the Environment within sixty days from the submission of the application. Following the expiry of this time limit, the Ministry issues the required authorization (within the following sixty days) on the basis of its own investigation, thus exercising its power of substitution vis-a-vis the region.

Checking plans to bring emissions from thermoelectric plants and refineries into line with limit values laid down by law:

* The region issues a provisional authorization relating to any substantial modifications to to be made to existing plant; if it fails to do so the Ministry of Industry issues the required authorization in its place.

The determination of air quality limit values:

* The Ministry of the Environment is empowered to fix air quality limit values; however, if it has failed to do so within ninety days from the issue of the relevant decree, the region concerned may issue the authorization required, in the light of authorizations issued earlier for similar plant.

2.2 CONSULTANCY AND RESEARCH

The powers referred to under the preceding points can only be exercised if supported by research and consultancy activities carried on by appropriate departments, institutions and other bodies.

Research, consultancy and data-collection

This heading covers all those activities such as research, data collection, experimentation, the issue of opinions, etc., which enable the competent central authorities to acquire a precise knowledge of the incidence of pollution and its causes and take appropriate measures to prevent or reduce it.

While coordination, decision- and policy-making activities and legislative powers are reserved for the competent authorities (e.g. the Ministries of the Environment and Industry and the regions), tasks involving the collection and transmission of data and consultancy activities are carried out by a number of bodies, institutions and public or private agencies, as will be described below.

For the monitoring of emissions from all types of industrial and heat-producing plant the procedure is as follows:

* The **public health services** of the **local health units** in the respective **municipalities** and the **monitoring stations of the Multizonal Preventive Measures Office** are responsible for monitoring atmospheric pollution levels caused by domestic heat-producing plant, industrial establishments, generating stations and motor traffic within their areas of jurisdiction. To aid them in this task, these bodies may also call on the **provincial fire service authorities**.
* The data collected are transmitted to the office of the **regional executive counsellor for the environment** (**or public health**), who draws up a regional inventory of pollutant emissions on the basis of a pre-established plan. This information is then used in connection with the issue or revocation of authorizations in cases provided for by the law (see note to the following paragraph). Alternatively, a report regarding cases in which the air pollution limit values have been exceeded is transmitted to the **Ministry of Industry**.

* In such cases, the **Ministry of Industry**, having regard to the opinion of the **Ministry of the Environment** and making use of the information and experience gained by:
  - the **ISPeSL** (Dipartimento insediamenti produttivi ed impatto ambientale: emissioni fisiche ed emissioni chimiche - Department of Industrial Establishments and their Environmental Effects: Physical and Chemical Emissions);
  - the **National Health Institute** (Laboratorio d'igiene dell'aria - Laboratory of Atmospheric Hygiene);
  - the **ENEA** (Dipartimento ambiente e salute, Laboratori in località "Casaccia" - Department of Health and the Environment: Laboratory in Casaccia);
  - the **CNR** - Consiglio nazionale delle ricerche - National Research Council (Laboratorio di Fisica delle'Atmosfera - Atmospheric Physics Laboratory);

issues authorizations for the construction of thermal power stations or refineries, or orders the preventive suspension of activities or revokes the production authorizations in respect of existing plants(1).

The procedure just described, except where it is applied to plants already in operation, is considered as taking the place of the Environmental Impact Assessment Plans, the relevant EEC directive not being yet incorporated into Italian law.

2.3 INSPECTION AND CONTROL

Preventive measures and enforcement

The ministries, the regions and the competent local authorities are empowered to take preventive measures with regard to atmospheric pollution; however, where failure to comply with the law results in injury to persons, property or the environment, or causes serious accidents, enforcement and the imposition of penalties become the responsibility of the appropriate courts.

The functional responsibilities referred to - which constitute one of the subjects of this Report - are exercised in the manner described below.

* **Matters subject to control:**
  - the construction of thermoelectric generators, refineries and fuel storage facilities, steel works and chemical and processing plants, etc.;
  - existing plant already authorised to operate in one of the sectors listed above;
  - compliance with emission limit values;
  - restructuring or modifications, using the best available technologies, to enable compliance with emission limit values;
  - the market quality of the energy sources and raw materials used in the production process.

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(1) In cases where authorization is requested for the construction or operation of plants other than generating stations or refineries, the competent authority for the two procedural stages referred to is the **region concerned**. These powers may, however, be delegated to the appropriate **province** (e.g. in the case referred to in this study, of the Lazio Region). The competent region continues to be responsible for the measures taken, however.

* **formalities to be completed by the plant operator:**
  - applications for authorization in respect of construction and entry into operation;
  - application for authorization in respect of proposed modifications to ensure compliance with emission limits;
  - submission of data relating to the start-up and entry into operation of the establishment;
  - submission of data relating to emissions.

* **levels of control and enforcement:**
  - the **Preventive Measures Offices** (provinces) and the **public health services** (USLs/municipalities) run monitoring networks for atmospheric pollution deriving from every type of plant;
  - **provincial committees** and **USLs** are empowered to enter establishments and plants for inspection and monitoring purposes;
  - the **region** concerned carries out checks before issuing a construction authorization; in addition, it is empowered to issue enforcement notices in cases where emission limit values are exceeded and may issue warnings or temporarily revoke the relevant authorization if the operator does not comply with the terms of the enforcement notice;
  - the **Ministry of Industry** is also empowered to issue enforcement notices and warnings or revoke authorizations, but only in respect of thermal generating plant, refineries and fuel storage facilities.

2.4 INFORMATION AND GUIDANCE

Information and guidance concerns the involvement of the population in general and in some cases population groups at particular risk or living in heavily polluted areas. Information, both scientific and social in character, is provided regarding the evolution of the pollution situation, together with an evaluation of biological damage and damage to the ecosystem and details of planned preventive or pollution abatement measures.

These activities may be carried out directly by the central authorities (via the Ministries), by public scientific bodies or local authorities; information may also be provided through the media or specialised publications.

The principal means used by the Ministry of the Environment to fulfil this task is the publication of the biennial **Report on the State of the Environment in Italy** (required under Article 1 of Law 349/86), which contains information, data and statistics regarding international problems (climatic changes), the state of the water and air, radioactivity, wastes, etc., in addition to "limiting factors" such as electricity production, industry and agriculture, and public expenditure on the environment (including training and research).

In addition to the Ministry's own services (e.g. the Directorate General for Environmental Impact Assessment, and the Public Information Service), all public administration sectors with which the Ministry collaborates contribute to the preparation of this Report; the latter, in connection with their advisory role, also provide various chapters on specific questions.

Since the administrative framework for jurisdiction in environmental matters has not yet been defined, in preparing the Report the Ministry also calls on ad hoc sources, e.g. institutions or individual experts not normally forming part of the decision-making and regulatory procedure described in another section of this Report. The following is a complete list (except for the ministries, bodies and institutions already referred to) of these sources:

- Ministry of Labour;
- Ministry of the Merchant Marine;
- Ministry of Health;
- Ministry for the Cultural and Environmental Heritage;
- Ministry for Scientific Research;
- Institute for Scientific and Technological Research;
- Central Institute for Restoration;
- Department of Civil Defence;
- Central Statistical Institute;
- La Sapienza University, Rome;
- The Seismological Service;
- The "Friends of the Earth" Association;
- ECOTER (wastes);
- ECOCERVED (data bases).

For the years 1987 and 1988 the Ministry of the Environment has allocated a sum of LIT 133 billion at current prices to activities designed to provide a complete picture of the pollution situation (e.g. cartography, monitoring services, etc.), which cannot be financed under the usual expenditure headings such as air, soil, radioactivity, etc. This amount corresponds to 4-5 % of the Ministry's budget.

The Ministry is also empowered to conduct public information campaigns, calling on private advertising firms and recognised environmentalist associations for this purpose. The related requirements and objectives are specified in decrees issued from time to time.

In the two-year period 1986-1987 the regions spent about LIT 190 billion on studies and research activities in their respective territories.

Environmental education

The Ministry of the Environment has carried out a survey covering a representative sample of secondary and upper secondary schools, to determine the level of awareness of environmental problems and the degree of involvement by bodies and organisations outside the school system.

The results of the survey were as follows:

* tuition in the elements of ecology: 68.2 %;
* film shows: 46.5 %;
* distribution of instructional material: 42.4 %;
* visits to exhibitions on environmental themes: 27.5 %;
* visits to parks and nature conservation zones: 46.7 %;
* dissemination of certain rules of conduct (e.g. energy saving, re-use of plastics and paper, refuse sorting): 31.8%;
* with regard to participation by outside organisations, the regions and local authorities were the most active, while environmentalist associations accounted for 22 % of all cases. The university faculties took little part.

Training

The Ministry of the Environment is involved in training activities through the Directorate General referred to above. Training is given by the vocational schools, through regional courses (Ministry of Labour) and courses financed by the European Social Fund.

The regional courses are designed to meet local demand (e.g. courses for gamekeepers, nature guides, etc.). The subjects mainly concern organic farming, while a smaller number of courses are offered on water and air pollution and treatment, and waste disposal.

The public research and consultancy institutes are also involved in training and information activities.

The means used to carry out these activities are adapted to the field of competence of the agency concerned. With regard to the prevention of air pollution, the functions of the respective institutes are as follows:

* the **ENEA** (Ente nazionale per l'energia et l'ambiente - National Institute for Energy and the Environment)
  Carries out studies and research and provides advice on:
  - the development and use of technologies, the safety of nuclear plants and protection from ionizing radiation;
  - the control of special fissile materials, raw materials and minerals.

  In connection with these activities, the Institute:
  - promotes and fosters the training of personnel;
  - disseminates the knowledge acquired.

  To carry out the tasks listed above, the Institute:
  - concludes programme agreements with the appropriate Ministries;
  - promotes the rational use of energy and the use of alternative energy sources through associations of firms;
  - concludes agreements with regions or individual provinces or municipalities;
  - signs contracts with universities and other research institutes regarding their participation in its studies and experiments;
  - publishes a fortnightly journal, "Energia e Innovazione" (Energy and Innovation);
  - gives notification of conventions and seminars.

* the **ISS** (Istituto superiore di sanità - National Health Institute)
  Carries out studies and research and provides advice on:
  - pollutant emissions;
  - pollutant dissemination and distribution modelling and the related indicators;
  - quality standards;
  - data collection techniques;

- the identification of areas at risk;
- the dangers of human exposure to pollutants.

In connection with these activities, the Institute:

- acts as consultant to the competent Ministries, in respect of parliamentary questions and interpellations, and to the regions and local authorities;
- organises the training of its own personnel and their participation in outside courses as teachers;
- informs the public.

To carry out the tasks listed above, the Institute:

- compiles and studies legislation, both Italian and foreign;
- runs a library also containing newspapers, periodical, etc.;
- promotes and coordinates conventions, seminars and training courses;
- publishes a review, "Rapporti", periodicals (ISTISAN), and a series of updated information sheets on toxicology.

* **The ISPeSL** (Istituto superiore per la prevenzione e la sicurezza sul lavoro - National Institute for Preventive Measures and Safety at Work)
carries out studies and research and provides advice on:

- technological advances in plant, materials and production processes;
- safety systems, with a view to the approval of machinery, plant and parts thereof.

In this connection:

- the Institute's various departments carry on a series of integrated activities concerned with research, proposals for rules and standards, and documentation and advice on plants subject to a high risk of accident.

To carry out the tasks listed above, the Institute (through the appropriate departments):

- programmes training courses for its personnel;
- collaborates with the ministries concerned by its opinions and advice;
- carries out studies and surveys jointly with other research institutes;
- publishes an "Information Sheet" every four months, for which its Documentation Service is responsible.

The university system

The disagreement between those who wish to establish ad hoc degree courses on the environment and those who would prefer to see modifications to the existing structure must be resolved in favour of the most appropriate solution.

The faculties at present concerned with environmental problems are the following: mathematics, physical and natural sciences, engineering, architecture, industrial chemistry and agriculture, which together account for about 90 % of the courses offered and involve the participation of about 375 teachers of environmental and ecological subjects.

CHAPTER 3

CHOICE OF PUBLIC SECTOR STRUCTURES COVERED BY THE STUDY

CHOICE OF CASE STUDIES

As provided for under the research programme, studies were carried out on a minimum of ten services and departments, relating to nine agencies invested with powers in regard to atmospheric pollution by Italian legislation.

In truth the choice was limited, however, in that the structures covered account for almost all those concerned in various ways with problems relating to air quality. The only omission, under the "Research and Consultancy" heading, was the Technical and Scientific Committee set up by the Ministry of the Environment under the Decree of 20.05.91, since it has the task of updating the rules and technologies applying solely to the air pollution monitoring networks, and the Atmospheric Physics Laboratory of the National Research Council (CNR). This latter carries out analyses and research projects of its own choice, occasionally calling on the collaboration of other institutes such as the ENEA's "Casaccia" Centre.

Under the legislation in force, the institutional structure under study in this report is broadly divided into two levels:

* **central government level:**
  - the **Ministry of Industry**, as regards powers relating to energy production and the refining of hydrocarbon fuels;
  - the **Ministry of the Environment**, as regards the tasks and powers relating to policy-making and programming;
* **regional government level:**
  - the **regions**, as regards powers and functions in relation to all other industrial plant.

Consequently, we have sought to identify the most significant occupational profiles at these two levels as regards both policy-making and the acquisition of knowledge.

As regards the other functions, "Research and Consultancy", "Inspection and Control" and "Information and Guidance", it appeared to us that the cases examined comprehensibly fulfilled an operational and support role vis-a-vis the upper levels of the public administration.

In **Annex I**, the powers and functions of the various public structures under study and described in **Chapter 1** are set out in tabular form.

3.1 THE CENTRAL AUTHORITIES

Case 1 - The Ministry of the Environment

Functions: policy-making; consultancy and research; information.

* **General Affairs Division: environmental impact assessment, public information, and "Report on the State of the Environment"**

A.	Division I: environmental impact assessment	1.	Interview with Head of Division
B.	Atmospheric and acoustic pollution and high-risk areas	2.	Interview with Head of Service
C	Division II: general affairs and public information	3.	Interview with Director

Case 2 - The Ministry of Industry

Functions: policy-making; technical and scientific; application of provisions; information.

* **Directorate-General for Industrial Production**

D.	Division XI	4.	Interview with technical specialist

* **Directorate-General for Energy Sources and Industry**

E.	Support group for the management of the National Energy Plan	5.	Interview with Head of Group

3.2 THE RESEARCH INSTITUTIONS

Case 3 - The ISS (Istituto superiore di sanita - National Health Institute)

Functions: consultancy only.

F.	Environmental health laboratory	6.	Interview with Head of air quality Department

Case 4 - The ISPeSL (Istituto superiore per la prevenzione e la sicurezza del lavora - National Institute for Preventive Measures and Safety at Work)

Functions: consultative only

G.	Department for industrial establishments and their environmental effects	7.	Interview with Director

Case 5 - The ENEA (Ente nazionale per l'energia e l'ambiente - National Research Institute for Energy and the Environment)

Functions: consultancy only.

H.	Energy, Environment and Health Department	8.	Interview with Head of Unit for the coordination of activities relating to the world climate
		9.	Interview with Head of "preventive measures" Unit

3.3 THE REGIONAL AND LOCAL AUTHORITIES

Case 6 - The regions

Functions: policy-making; consultancy; inspection and control; information.

I.	Office of the Regional Executive Councillor for the environment (or public health). Department I: air pollution, noise and vibration	10. 11.	Interview with Head of Unit (Lazio) Interview with Head of Unit (Tuscany)

Case 7 - The provinces

Functions: issue of authorizations; consultancy; inspection and control; information.

L.	Office of the Councillor for the Environment: air quality protection service Province of Rome)	12. 13.	Interview with Head of Service Interview with technician attached to the monitoring service

Case 8 - The PMP (Presidio multizonale di prevenzione - Multizonal Preventive Measures Office)

M.	Environment Department (Province of Rome)	14. 15. 16.	Interview with Head of Department Interview with chemist Interview with industrial gaseous wastes control officer

Case 9 - Local authorities and USLs (Unita' sanitaria locale - Local Health Units)

Functions: consultancy; inspection and control; information.

N.	Public Health Services	17. 18.	Three interviews with Heads of Section (USLs RM3, RM7 and VT2) Two interviews with health inspectors (USLs RM7 and VT2)

CHAPTER 4

SURVEY OF OCCUPATIONAL PROFILES IN THE PUBLIC SECTOR WITH REFERENCE TO AIR POLLUTION CONTROL: CASE STUDIES

4.1 CRITERIA USED FOR ANALYSIS AND EVALUATION

The on-the-spot survey took the form of a series of personal interviews; the interviewees were selected on the basis of a sampling method.

In most cases the interviewees were the heads of their respective units; direct discussions were held during which the objectives of the study were explained and the necessary information elicited.

The questionnaire used in the interviews (see Annex II) was developed by a team of experts from each of the five countries involved in the present study.

The first part of the questionnaire contains questions of a general nature regarding the structure under study, the legislation under which it was established and its links - and forms of collaboration - with other organizations.

The following section concerns the activities of the structure and specifically of its services devoted to air pollution control.

The final section focuses on the occupational profiles of personnel involved in environmental protection activities, with particular regard to air pollution.

The number identifying each interview corresponds to that in the relevant job description table in Chapter 5. Two code numbers are thus attached to each case study, the first of which relates to the structure or institution in question: a table is appended to each case study setting out the related tasks and functions, the skills required for their execution and the resulting occupational profiles.

The second number refers to the individual occupational profiles, the characteristics of which are set out in tabular form in Chapter 5.

The personnel selected for analysis, although possessing the knowledge, skills and capacities required in their respective fields, differ in their levels of autonomy and responsibility and in the complexity involved in the management of their assigned tasks.

4.2 CASE STUDIES

CASE 1 THE MINISTRY OF THE ENVIRONMENT

The Ministry is concerned with the prevention and control of pollution and improvements to the environment in areas where damage or contamination has resulted from the operation of industrial plants or other human activities. It pursues these objectives by various means: regulatory activities; the issue of authorizations; monitoring and surveys; and the provision of information. The Ministry has the following tasks: supervising the application of environmental legislation; initiating legislative activity; adopting preventive measures and incorporating European rules; drawing up the biennial Report on the State of the Environment; and setting up crisis committees in the event of emergencies.

The Ministry's field of competence is specified by Law 349/86 (establishing the Ministry itself), and Presidential Decrees 203/88 and 306/87.

Originally, the Law n° 349 set up a department for the prevention of environmental pollution; however, this service was divided into two Directorates-General: the Directorate-General for Atmospheric and Acoustic Pollution and High Risk Areas (1) and the Directorate-General for Environmental Impact Assessment, Public Information and the Report on the State of the Environment. In turn, this latter is subdivided into three Divisions: Environmental Impact Assessment, General Affairs and Public Information, and Environmental Monitoring and Data Processing.

The Air Pollution and High Risk Areas Service (SIAR) forms part of the Environmental Impact Assessment Division.

The Ministry maintains relations - and collaborates - with the Ministries of Public Works, Industry and the Cultural Heritage (for areas subject to constraints regarding the landscape), and the Ministry of the Merchant Marine in respect of publicly-owned costal areas. Other inter-agency relationships - including that with the Atmospheric Physics Institute of the National Research Council - may be activated through a framework agreement embodied in law.

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(1) This expression refers to all areas with a high concentration of industrial activity (e.g. Manfredonia) and large cities.

In the context of this study, the Ministry's activities in collaboration with the Pallanza Hydrobiological Institute on Lake Maggiore are of interest. The Institute coordinates the monitoring of acid rain precipitation through a network of about 50 monitoring stations.

Protocol agreements have been concluded with other Ministries, e.g. the Ministry of Education in respect of teacher training (framework agreement of 27.02.91), and the Ministry of Defence for matters concerning civil defence. A framework agreement has also been concluded with the ISTAT (Istituto centrale di stadistica - Central Statistical Office) in respect of the introduction of questionnaires for census surveys of the various sectors - industrial, commercial and agricultural - in addition to the supply of data on environmental matters.

The Ministry also collaborates with private sector bodies, e.g. research institutes and service companies (for the supply of instruments). In this connection, in the absence of a systematic data collection system for the material required in preparing the Report on the State of the Environment, a national environmental information system has been set up (2); this system is not yet fully operational, however, and in the meantime private research centres have been called on to provide data regarding the various ecosystems.

Under the provisions applying to the Ministry of the Environment, the Directorate-General for Environmental Impact Assessment should have a staff of about 80 persons, including unit heads, officials and other employees; at present, however, it has only about 40, of whom half are its own personnel and half are seconded from other departments. In the "Air, Water and Soil" Division, the Division's own personnel are considerably outnumbered by seconded staff. As a result of these deficiencies, personnel in these understaffed units are obliged to work overtime on a substantial scale.

Throughout the civil service, personnel are recruited through competitive examinations and advancement is based on seniority and success in competitions. In the case of the Ministry of the Environment, technical and scientific personnel are seconded from other civil service departments.

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(2) The national environmental information system is still in the start-up phase; contracts have been concluded with the central data bank for the supply of hardware.

The Ministry's existing staff, drawn mainly from other civil service departments, possess diverse characteristics.

The environment sector makes use of specific skills which do not result from academic training but are acquired through experience in particular fields - for example nature conservation in protected areas. In the Environmental Impact Assessment Division, which is responsible for environmental protection in urban areas and industrial zones, most of the staff are architects or engineers; the Division also employs sociologists who are concerned with the social and economic consequences arising from injurious or dangerous production processes.

The Civil Service Staff Regulations (Law 312/80) specify the occupational profiles relating to jobs in the environment sector entailing an overview of the activities of the public authorities with regard to environmental protection.

Training

The Civil Service College is responsible for training plans for officials, which include self-instruction and updating, and attendance at conventions, besides participation in outside training courses.

Interview 1
Deputy Head of Division I: Environmental Impact Assessment

The Division's field of competence

Authorization procedures, based on environmental impact assessment, for motorways, thermal generating stations, railways, chemical plants, plants for the disposal of toxic and injurious wastes, steel-making plants and other major works; the Division also contributes, in respect of its particular area, to the preparation of the Report on the State of the Environment.

Inter-agency relationships are maintained with the National Health Institute, which provides technical support, the ISPeSL, the CNR, and the regions and local authorities. The Division - or individual experts from its staff - also participates in the work of the Ministry's scientific committees.

Tasks of the Head of Division

Directing, organising and coordinating the unit's activities. The Head of Division holds a degree in architecture.

The organisation of the Division

The majority of graduates on the staff are architects (ten in number); however, there are also two engineers, holding degrees in nuclear and civil engineering respectively, and one graduate in literature.

The Division is understaffed; but it is hard to say which type of skilled personnel is most needed. The Division's activities cover a wide range of disciplines, from ecology to geology and from physics to biochemistry, calling for plant engineers, project architects, etc.

The preponderance of architects on the staff may partly be explained by their versatility and partly by their extensive previous experience in the public service.

Grades accorded under contract do not correspond to actual functions. Most of the architects attached to the Division were recruited under Law 285/79 and graded at level VI (i.e. equivalent to certificate holders) and not at a level equivalent to that accorded to graduates in other civil service departments.

It would be theoretically possible for personnel to function with a high degree of autonomy, but given that staff numbers correspond to one tenth of real requirements it is very difficult to organise the work on rational lines.

It is indispensable for personnel to possess an overall knowledge of the functioning of the civil service.

Interview 2
Head of the SIAR Service: Atmospheric and Acoustic Pollution and High Risk Areas

Field of competence of the Service

Formulation of national legislation concerning rules on emissions from fixed or mobile sources and air quality standards. Incorporation of the relevant EEC directives and international conventions on atmospheric pollution.

Concertation with the Ministries of Industry and Health as regards the approval of projects for refineries, thermal power stations and petroleum storage facilities.

Approval of projects for off-shore oil-drilling platforms.

The issue of authorizations for new plant in cases where the region in question fails to give a decision on the matter within sixty days.

Certain measures are adopted jointly with the Ministries of Health and Industry.

In certain cases opinions are requested from the regions (Conference of Presidents of the Regional Councils).

Tasks of the Head of Service
Management and coordination of the unit's activities regarding emissions from fixed installations (i.e. excluding motor vehicles).

The Head of Service holds a degree in engineering.

Organisation of the Service
The Service has a staff of four officials and four secretaries.

Interview 3
Acting Director of Division II of the Directorate-General for Environmental Impact Assessment: General Affairs and Public Information

Field of competence of the Division
Informing the public regarding the environmental situation throughout the country; the transposition of Community rules; the dissemination of data. The Division is also responsible for an environmental impact assessment procedure provided for in a Community Directive but not yet incorporated into Italian law. This procedure is designed to establish the compatibility or otherwise of an industrial establishment with its immediate environment. EIA procedures are concerned with atmospheric pollution solely in relation to certain cases such as the construction of power stations using fossil fuels. The Division is also involved in environmental education activities since it is responsible for the management of the three-year INFEA (Environmental Information and Education) programme financed from the Ministry's budget.

Tasks of the Director
The Director is responsible for the administrative aspects of the relevant procedures and contracts, the conclusion of agreements with personnel, the provision of information to the public and environmental education. This latter activity includes the preparation of the Report on the State of the Environment and the organisation of multimedia campaigns to raise public awareness regarding environmental matters.

The Director holds a degree in architecture.

Organisation of the Division

The Division has a staff of ten persons with grades ranging from Level IV to Level VIII. Given the shortage of personnel, officials with administrative and organisational tasks may also be constrained to carry out tasks of an executive or secretarial nature.

The degree of autonomy enjoyed by the Division's personnel is laid down in the Public Service Staff Regulations (3).

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(3) For example, a level VII official may not represent the Ministry vis-a-vis other authorities or bodies, and is not empowered to sign official acts.

	Ministry of the Environment		
Case 1	Tasks	Skills & Competences	Occupational Profiles
Policy-making	**REGULATORY ACTIVITIES** (for plant with a capacity exceeding 50 MW): - minimum & maximum values for emissions; - more stringent limit values in special cases; - methods of sampling & analysis; - best available technologies; - preventive measures; - control; - rehabilitation measures.	**THOROUGH KNOWLEDGE** & understanding of national & European legislation & an ability to contribute at this level **OVERALL KNOWLEDGE** of government structures in relation to atmospheric pollution	1. **HEAD** of Division I: Environmental Impact Assessment 2. **HEAD** of SIAR 3. **ACTING DIRECTOR,** Division II: General Affairs & Public Information
Research & Consultancy	**OPINIONS & PROPOSALS** to government agencies regarding: - authorisations for plants; - enforcement notices & warnings; - revocation of authorisations.		
Inspection & Control	**JOINT COMPLIANCE CONTROL MEASURES** **ACTION** through the Police Ecology Unit in cases of non-compliance	**CAPACITY** for communication, guidance & tuition **KNOWLEGE** of the environmental & social (with regard to EIA procedures & emergencies)	
Information & Guidance	**PREPARATION** of the Report on the State of the Environment **PUBLICATION** of data on environmental impact assessment **PUBLIC INFORMATION** **GUIDANCE** for vocational training personnel	**CAPACITY** for coordination & supervision	

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Case 2 The Ministry of Industry

The primary task of the Ministry of Industry is to protect and promote the country's industrial development.

Presidential Decree 203/88 stresses the Ministry's consultative role in respect of general questions, the establishment of guidelines in regard to new plant, rehabilitation plans and quality criteria.

The Ministry comprises various Directorates-General, which in turn are subdivided into Divisions. The Directorates-General most directly concerned with air pollution are the following: the Directorate-General for Industrial Production; and the Directorate-General for Mines (ad hoc legislative framework).

The Directorate-General for Industrial Production consists of a single Division (Division XI), which is concerned with environmental questions. The Head of this Division holds a degree in law, while the two technical specialists are respectively a chemist and a mechanical engineer.

Training

Under the terms of their contracts, personnel are obliged to attend courses for every career advancement involving a change in skill levels. On the other hand, participation in courses organised by the Civil Service College is optional. Updating is effected via participation - on invitation - in conventions organised by employers associations. The heads of units act as teachers in the training courses.

Interview 4
Level IX technical specialist (chemical staff)

Field of competence of the Division

The Division's activities consist in executing administrative procedures, analyzing acts and adopting measures, sometimes at the request of the Minister's Office. More specifically, Division XI is concerned with the examination of legislative provisions, parliamentary and ministerial initiatives, and the legislative framework. In addition, the Division replies to parliamentary questions relating to the sector and submits opinions at the Minister's request.

The Division examines, and proposes the incorporation, of provisions relating to the problem of transfrontier air pollution over long distances - especially where extensive areas are affected (4). It also analyses problems relating to the sector on behalf of the OECD, the EEC and the Council of Europe.

Organisation of the Division

There is no rigid division of tasks within the unit; all staff members participate, contributing their particular skills in accordance with their respective roles in the hierarchy. A high degree of autonomy is enjoyed, decisions being taken collectively.

Broadly speaking, the unit's activities relate to three areas: air, water and soil. The time devoted to each is directly proportional to the legislative activity in the area concerned.

Lately, as a consequence of recently introduced legislation, attention has been focused on air pollution and waste disposal.

Analyses are carried out by formal and informal - and sometimes interdivisional - working groups. The unit also collaborates with industrial and other associations.

Interview 5
Head of the Support Group for the Management of the National Energy Plan

The Group's field of competence

The Group forms part of the Directorate-General for Energy Sources, which is concerned with the following: air quality legislation and technical standards, jointly with the Ministries of Health and the Environment; the compilation of the inventory of pollutant emissions relating to the National Energy Plan (5); the provision of advice to the CIPE (Interministerial Economic Planning Committee) as regards the economic and market aspects of energy sources; and environmental protection, particularly through the issue of authorizations relating to thermal power stations, refineries and fuel storage facilities.

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(4) Two decrees on nitrogen oxides and sulphur dioxide, which cause acid rain, are undergoing revision. An instrument relating to the control of volatile organic substances is also in preparation.

(5) In this sense, the unit is regularly concerned with the "greenhouse effect" caused by emissions of carbon dioxide and nitrogen oxides.

The laws regulating the Division's field of competence are: Presidential Decree 203/88, Presidential Decree 691/82 (waste oils disposal services), laws nos 9 and 10 of 1991 (concessions for storage facilities and refineries), and Law 175/88 (high risk plants).

Under the provisions of Law 349/86 establishing the Ministry of Environment, the Energy Sources Division participates in the work of the interministerial committees responsible for fixing guidelines for emissions from new and existing plant.

In addition to the ministries referred to, the Division collaborates with the National Health Institute, the ENEA (National Research Institute for Energy and the Environment), the CNR (National Research Council) and with public-sector industries (e.g. the ENI - National Hydrocarbon Agency) in the exercise of its surveillance function. It maintains relations wi'h industrial associations in the private sector, especially in regard to the preparation of legislative texts and the issue of authorizations.

Tasks of the Head of Unit

The responsibilities of the Head of the support group for the management of the National Energy Plan are mainly those of a staff function; personnel are seconded as the need arises. His field of activity relates to environmental problems resulting from energy production. The Head of Unit holds a degree in theoretical physics.

At present the staff is made up of personnel seconded from the ENEA, of whom only two are concerned with air pollution. The activities are: legislative, i.e. authorizations for new plants or the restructuring of existing plants; replies to parliamentary questions; counselling on legal points in response to requests by judges.

The unit's personnel mainly have a legal or technical background; on the technical side, the staff includes graduates in plant engineering and industrial chemistry, and holders of technicians' certificates in electrical and mechanical engineering.

Upper level posts entail responsibilities and the exercize of official authority, while intermediate level posts are filled mainly by graduates, whose tasks are investigative in nature; they have lesser responsibilities and are not empowered to sign authorizations. Lower level posts are held by certificate holders with operational tasks.

The work is carried on by teams until a formal decision becomes necessary; at this point the degree of autonomy enjoyed is closely defined.

Top level post holders have an overall view of the functioning of the public service in relation to atmospheric pollution.

Article 22 of Law 10/91 provides for an overall restructuring of the Directorate-General for Energy Sources with a substantial increase in staffing levels (the recruitment of more than 100 persons is provided for).

Under a decree at present under discussion, two sub-directorates would be set up, to which various divisions and services would be attached. In particular, an environment division would be established.

	Ministry of Industry		
Case 2	Tasks	Skills & Competences	Occupational Profiles
Policy-making	**ISSUE OF AUTHORIZATIONS** for the construction of thermal power stations & refineries (for plant with a capacity of less than 50 MW) **ISSUE OF DECREES** on: - limit values; - guideline values.	**TECHNICAL & LEGAL** knowledge **OVERALL KNOWLEDGE** of the legislation & an ability to contribute at this level **SPECIALISED** technical & scientific knowledge **CAPACITY** for communication **CAPACITY** for coordination & supervision	4. **TECHNICAL SPECIALIST,** Directorate-General for Industrial Production 5. **HEAD** of the support group for the management of the National Energy Plan
Research & Consultancy	**TRANSMISSION OF OPINIONS AND PROPOSALS** to other government agencies		
Inspection & Control	**ENFORCEMENT NOTICES** (to power stations & refineries) and: - warnings; - revocation of authorisations; - plant closures for failure to comply with limit values.		
Information & Guidance	**PUBLICATION** of applications for authorisation		

Case 3 - The ISS (Istituto Superiore di Sanità - National Health Institute)

The ISS is a technical and scientific agency forming part of the national health system. Its role is to promote public health through scientific research.

The Institute promotes and organises conferences and training activities for health workers. It collaborates with the Ministry of Health in the formulation and implementation of public health programmes. The Institute is required to collaborate with all public research institutes, including those attached to universities. It can also conclude agreements following a complex procedure which entails authorization by the Scientific Committee and the Institute's administration.

The Institute comprises various laboratories, which in turn are subdivided into departments. The Air Quality Department is attached to the Environmental Health Laboratory.

The field of competence of the Institute is specified in DPR 528 of November 1987.

Under Article 6 of Law 833/78, the Institute was given the task of developing a methodology for the investigation of atmospheric pollution.

Training

Training activities include self-instruction and updating, besides participation in conferences. The Institute organises training courses for employees of the national health system.

Interview 6
Head of the Air Quality Department

Field of competence of the Department

The Department's research activities cover the following areas: recording and processing data on pollutants; analyzing treatment processes for sources of emissions; pollutant dissemination modelling; developing surveillance procedures.

The unit provides medical advice to local authorities. In cases of emergency, massive pollution or accident it carries out analyses and monitoring activities. Given the improved operation of the Multizonal Preventive Measures Office (PMP), air quality monitoring is no longer an arduous task.

The Department is involved in the continual updating of legal provisions, develops methodologies for research into atmospheric pollution, and provides information through the preparation and dissemination of reports (6).

As regards relations with other institutes, the Department collaborates most frequently with ISPeSL, and less regularly with the ENEA and the CNR. It is empowered to establish relationships with institutes not specifically concerned with atmospheric pollution (7).

Tasks of the Head of Department

The Head of Department's activities mainly relate to organisation and coordination aimed at the production of the annual report on the Department's research activities. He holds a degree in biology.

Organisation of the Department

The Air Quality Laboratory has several departments. Staffing levels are adequate. The Laboratory has about 100 personnel, of whom eight are concerned with atmospheric pollution; four of the latter are concerned with remote sensing. The research workers are graduates; the new regulations provide for a chief technician, who must be at least a certificate-holder (the present post-holder is a graduate), and an assistant technician. Some staff members are engaged under fixed-term contracts.

The research workers enjoy a degree of autonomy which is limited by the institute's strongly hierarchical structure (for example, every publication must bear the signatures of both the Head of Department and the Director of the Laboratory).

Through their work within the structure, personnel acquire an overall picture of the functioning of the public service in relation to atmospheric pollution, which is indispensable for the fulfilment of their tasks.

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(6) Reports are published by the government printing house; however, publication is insufficiently prompt, with the result that the material is liable to become obsolete. The Institute itself can publish documents rapidly, but only a limited number of copies can be run off, inadequate for the needs of public information.

(7) Research work on the effects of ozone on the tobacco plant has been carried out in conjunction with the Botanical Institute.

	The National Health Institute (ISS)		
Case 3	Tasks	Skills & Competences	Occupational Profiles
Research & Consultancy	**RESEARCH WORK & CONSULTANCY** for the government, regions & local health units **DATA COMPILATION & ANALYSES** in respect of pollutants **ANALYSIS OF PROCESSES** employed in sources of emissions **POLLUTANT DISTRIBUTION MODELLING** **STUDY** of surveillance procedures **DEVELOPMENT** of monitoring methodologies **ANALYSES & DATA COLLECTION** in cases of emergency	**KNOWLEDGE** of monitoring methodologies **KNOWLEDGE** of relevant legislative provisions **SPECIALISED** technical & scientific knowledge **CAPACITY** for communication & tuition	6. **HEAD** of Air Quality Department
Inspection & Control			
Information & Guidance	**ANNUAL REPORT** on research activities		

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Case 4 - The National Institute for Preventive Measures and Health and Safety at Work (ISPeSL)

The ISPeSL is a technical and scientific agency attached to the Ministry of Health.

The Institute's field of competence is specified in the following instruments: Article 23 (Health Reform) of Law 833 of 27.12.78; DPR 619 of 31.07.80 (establishing the Institute); DPR 175 of 17.05.88 (incorporating EEC Directive 82/501 - the "Seveso Directive" - into Italian law); the DPCM of 31.03.89 (implementing provisions of DPR 175/88); and the DM of 01.02.84 (the Institute's internal regulations).

The Institute carries out analyses and acts as consultant to the central authorities and the regions. It comprises five technical and scientific departments at central level and 33 in outlying areas (basically one for each region, with additional establishments in heavily industrialised areas).

The central departments are: Health at Work, Industrial Medicine, Safety Technology, Approvals, and Industrial Establishments and their Environmental Effects. The Institute also has two "horizontal" services (Administration and Documentation) which operate in close conjunction with the line departments.

Each department comprises various laboratories or individual units concerned with specific subjects.

The regional departments are directly responsible to the Institute's administration and work in close conjunction with the central department laboratories. At present, due to staff shortages, the work carried out at regional level mainly concerns approvals. Under the new provisions, however, the regional departments will also be concerned with environmental effects relating to high-risk activities. An office will be set up in each unit which, in the event that a new industrial establishment falls within the provisions of the EEC "Major Accident Hazards" Directive, has the capacity to carry out especially thorough analyses.

The Institute is seriously understaffed. Recruitment - as throughout the civil service - is by competitive examination.

Personnel have been transferred from other public agencies such as the ANCC (National Association for the Control of Combustion Processes) and the ENPI (National Agency for the Prevention of Accidents), which have been wound up in order to concentrate the related tasks and functions in a single, more effective, structure. No competitive examination was held in this connection.

Personnel transferred to the Institute in this way possess skills and knowledge regarding health and safety at work, but not in relation to environmental effects. Adaptation proceeded successfully, however, and it was possible to accede to individual preferences in assigning staff to the respective departments. No training plan has been launched. Staff turnover is non-existent.

Training

Self-instruction and updating, in addition to participation in conferences.

Interview 7
Director of the Department for Industrial Establishments and their Environmental Effects

Field of competence of the Department

Research, consultancy, technical assistance, experimental monitoring of the interaction between industrial establishments and environmental conditions outside the workplace, in relation to problems linked to industrial plant, and with reference to the environmental impact of forms of energy liable to alter the biological or ecological balance.

Analyses and research activities therefore concern the environmental compatibility of industrial establishments, the economics and technology of the construction and operation of plants, chemical and physical emissions, and alarm and safety systems.

Consultancy and technical activities are carried out exclusively on behalf of the government, regions and local health units, as stipulated in the relevant legislation.

The Department is therefore concerned with the analysis of all aspects of hazards arising from industrial activities (e.g. the nature of the hazard, its magnitude, its potential consequences, and its context). Three types of hazards may be identified.

Permanent hazards: all industrial installations pollute the environment. This phenomenon is unavoidable but can be controlled by seeking to make the related activity more compatible with the environment; in other words, while the causes cannot be eliminated the effects can be alleviated.

Major accident hazards: events occurring without warning in emergency situations.

Potential hazards: here, the Department's activities are not aimed at controlling risks but analyzing safety measures to assess the probability of accident with a view to reducing and eventually eliminating the latter.

The Department's field of competence also extends to problems relating to nuclear energy and biotechnology, but it has no personnel with the skills necessary to cover these areas. This lack of skills can sometimes be remedied through collaboration with outside bodies - universities, for example. The Department is empowered to allocate part of its budget to research work carried out by outside bodies.

On completion of every research project a report is drawn up assessing the results in the light of the terms of the original commission.

Tasks of the Department's Director

The Director's tasks consist in the management and coordination of the Department and the programming of the activities carried out by its various laboratories and project units. He holds a degree in engineering.

Organisation of the Department

The Department comprises the following laboratories: constructional and operational technologies; industrial establishments; emergency measures; chemical emissions; ionizing and non-ionizing radiation; and noise and vibration.

An increase in the number of laboratories is planned, as provided for under a regulation issued in 1984.

There is no official establishment plan, but a proposal set out in the 1989-91 three-year work programme provides for a staff of about 150. The Department at present has 40 personnel, of whom 30 are technicians - either graduates or certificate holders - and the other ten are administrative staff.

Most of the technical staff holding degrees are engineers who, through their versatility, are able to make up for the lack of skilled personnel in areas other than their own.

Especially noteworthy is the lack of biologists, geologists and psychologists for environmental impact assessment; graduates in economics and business studies for cost-benefit analyses; and mathematicians and data processing specialists for systems analysis.

There is also a need for technicians (certificate holders) able to carry out monitoring and sampling activities and use data processing systems and mobile laboratories. The Department possesses personnel with these skills, but in insufficient number.

The lack of human resources makes it difficult to evaluate the efficiency of the laboratories since it is impossible to distinguish between low productivity and incapacity to comply with requests due to a shortage of staff.

The Director enjoys a high degree of autonomy within the limits imposed by the relevant legislation.

The autonomy enjoyed by personnel is governed by the legal and administrative rules applying to the civil service in general. Problems can arise, however, due to the lack of financial resources for research activities and bureaucratic delays.

The time devoted to activities relating to atmospheric pollution is divided between research projects under the annual work programmes, and consultancy and technical assistance activities under the monthly programmes.

	National Institute for Health & Safety (ISPeSL)		
Case 4	Tasks	Skills & Competences	Occupational Profiles
Research & Consultancy	**RESEARCH & CONSULTANCY** activities for the government, regions & local health units **TECHNICAL ASSISTANCE** **EXPERIMENTAL MONITORING** of the the interaction between industrial establishments & environmental conditions outside the work place, in relation to problems connected with industrial plant & with reference to the environmental effects of forms of energy liable to alter the biological balance	**ABILITY** to coordinate & supervise **KNOWLEDGE** of monitoring methodologies **KNOWLEDGE** of the relevant legislative provisions **SPECIALISED** technical & scientific knowledge **CONCEPTUAL & PLANNING** capacities; ability to develop methodology	7. **DIRECTOR** of the Department for Industrial Establishments & their Environmental Effects
Inspection & Control			
Information & Guidance	**ANNUAL REPORT** on research activities		

Case 5 - The ENEA (Ente Nazionale di Ricerca per l'Energia e l'Ambiente - National Research Institute for Energy and the Environment)

In accordance with recent legislation, the ENEA - in addition to energy and the environment - is concerned with water pollution, toxic and dangerous products, environmental impact assessment and land-use planning, and atmospheric pollution.

The Institute was established under Law 84/82.

The ENEA comprises a series of project units responsible to a Project Directorate. The Unit for the coordination of activities relating to the world climate - which comes under the Energy, Environment and Health Department - comprises three sub-units, respectively: air pollution modelling; preventive measures; and a Documentation Centre.

Training

Self-instruction and updating through the constitution of interdisciplinary groups; participation in conferences.

Interviews 8 and 9
Head of Unit for the coordination of activities relating to the world climate and the Head of the "preventive measures" sub-unit

Field of competence of the structure

The "air pollution modelling" sub-unit is devoted to the study of models for atmospheric pollution caused by chemical and physical agents.

The "preventive measures" sub-unit, which works in close coordination with the former, is primarily concerned with data compilation regarding atmospheric pollution at national and regional level; it also collaborates with the European Community in establishing an inventory of similar data at European level. In addition, the sub-unit studies preventive measures aimed at the alleviation of atmospheric pollution.

The Documentation Centre is concerned with the systematic compilation of documentation relating to air pollution.

In all these activities the Institute's services collaborate with the Ministry of the Environment, providing technical advice and contributing - in respect of atmospheric pollution - to the preparation of the Report on the State of the Environment.

The "world climate" unit collaborates with local authorities, the National Health Institute (working groups) and occasionally with the Atmospheric Physics Laboratory of the National Research Council. It is empowered to allocate funds to joint projects with outside bodies, e.g. for the development of atmospheric pollution models with the ARSI in Milan (part of the ENI Group); for the data bank with the TECNE company; and for atmospheric monitoring, with the Baccarini company.

Organisation of the Unit

No internal rules exist at present and the Unit is very understaffed (5 persons for all three sub-units) (8).

The staff, who are all graduates, have a technical background and are graded as research workers. The Head of the entire Unit (world climate) is a data processing expert and is concerned mainly with databanks and environmental models.

The Head of the "preventive measures" sub-unit is a process strategy expert. One of the research workers, who holds a degree in chemistry, is concerned with data analysis, air quality and chemical and photochemical processes in the atmosphere.

Two other research workers are physics graduates; one is concerned with modelling problems with special reference to processes on a global scale such as world climate changes, while the other is responsible for the Documentation Centre. Secretariat services are provided through arrangements established on a case-by-case basis with the assistance of collaborating bodies and consultants.

The research workers, once the objectives of their research projects have been fixed, enjoy a high degree of autonomy in the development of their activities. Frequent checks are carried out and information is regularly exchanged. Job titles in the Unit often do not correspond to actual function. This phenomenon can partly be explained by the Institute's background and the uncertainty which led to the under-utilisation of skilled personnel and in some cases their eventual departure (9).

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(8) A draft law at present before Parliament provides for an increase in the number of personnel through internal mobility.

(9) This comment refers to the thermonuclear energy programme, which was interrupted by the May 1985 referendum; with this, Italy renounced the use of nuclear energy, although existing installations were maintained subject to safety provisions.

Senior research workers possess an overall knowledge of the functioning of public sector agencies in relation to environmental pollution, while junior researchers maintain regular contacts at various levels of the public service.

	National Research Institute for Energy & the Environment (ENEA)		
Case 5	Tasks	Skills & Competences	Occupational Profiles
Research & Consultancy	**RESEARCH & CONSULTANCY** for the government, regions & local health units **AIR POLLUTION MODELLING** in relation to chemical & physical agents **INVENTORY** of pollutants at national & European level; data compilation **STUDY** of preventive measures for the abatement of air pollution **SYSTEMATIC COMPILATION** of documentation on air pollution	**KNOWLEDGE** of monitoring methodologies & laboratory techniques **SPECIALISED** technical & scientific knowledge **INTUITIVE** capacity	8. **HEAD** of Unit for the coordination of activities relating to the world climate 9. **HEAD** of "preventive measures" Unit
Inspection & Control			
Information & Guidance	**PREPARATION** of Annual Report on the state of the research		

Case 6 - The Regions

The regional authorities have the task of ensuring the consistency of activities relating to atmospheric pollution throughout the national territory. They have no operational tasks, which are performed by the provincial and local authorities and the local health units. The regions are responsible for implementing the national directives and guidelines issued by the Ministries of the Environment, Industry and Health, and coordinating the activities of the provincial authorities.

In the context of the national directives, the regions issue implementing decrees in accordance with the situation in their respective territories.

The regional governments comprise various executive councillor's offices, each of which is divided into Departments responsible for particular sectors of activity. Within these sectors, specific fields of competence are assigned to the respective Units, which in turn are subdivided into Sections.

The structures under study were in general understaffed and in some cases the qualifications of personnel did not correspond to their assigned tasks. Posts are obtained through competitive examinations or via provisions in the staff regulations relating primarily to seniority.

Heads of Department, who must be degree holders, are graded at Level XI, while heads of unit - who are also degree holders - are graded at Level IX. Heads of section, who are certificate holders, are graded at Level VII.

Training

The regions are preparing training plans. The Lazio region has launched a plan which concerns all senior staff. The courses are obligatory and the training modules relate to the following: relationships between the various departments and agencies in the public service; the structure of the respective agencies at various levels; interrelationships in the context of each sector. Training is provided by an outside organisation, and the courses are given within working hours. Courses in the use of data processing equipment have also been organised.

Interview 10
Lazio Region. Head of the "Air pollution, vibration and noise" Unit; Head of the "Air pollution" Section

The structure of the Lazio regional government is specified in Regional Law 61 of 11.01.85. Under the latter's provisions the administration is subdivided into Departments, Units and Sections. The unit under study has no technical personnel; its staff are administrative only and operational responsibilities in relation to environmental pollution have been delegated to the provinces. Consequently, the Lazio provinces possess powers in relation to air pollution and are involved in administrative, inspection and control activities throughout their respective territories. The region, however, is responsible for overall organisation.

Unit I, "Air pollution, noise and vibration", comes under Department 59, "Environmental health at places of work". The Unit has two sections, one of which is concerned with air pollution and the other with noise and vibration. Since no regional councillor's office for the environment has yet been set up, Department 59 comes under the health office.

The field of competence of Unit I

The Unit is concerned with the following: the coordination of the provincial authorities' administrative activities in relation to environmental pollution, with particular reference to the application of DPR 203/88; the management of the air pollution monitoring network; data collection; and the formulation and development, in accordance with legal provisions, of rehabilitation plans. The regions are also responsible for the administration of the restructuring plan for non-ionizing electromagnetic radiation, which concerns the siting of radio and television transmitters and standardisation of telecommunications channels.

Tasks of the Head of Unit

The Head of Unit is responsible for coordinating the activities of the sections. In practice, however, he is also involved in coordinating the activities of outside bodies (local health units, provinces, local authorities).

The Head of Unit I obtained the post through a competitive examination; he holds a degree in chemistry and is graded at Level IX. The fulfilment of his tasks requires familiarity with the functioning of public service.

The organisation of Unit I

The Unit is understaffed in both quantitative and qualitative terms. To an extent, the lack of technical skills can be made good through collaboration with the ENEA, the National Research Council and the Universities.

Tasks of the air pollution section

This section was set up a year ago and the interviewee is its sole staff member. This official is concerned exclusively with atmospheric pollution and is responsible for the establishment of the air pollution monitoring network for the province of Rome, which is still in the preparatory phase. In the remainder of the region this work is also in a preliminary phase, and the siting of monitoring stations is under examination in consultation with the local authorities.

Tasks of the Head of Section

The Head of the air pollution section is graded at Level VIII; he has 15 years' service (previously in the industrial medicine section) and holds an upper secondary school diploma in teaching.

His tasks involve the study of problems within the section's field of competence and the coordination of the related activities. In the case under examination, since the official has no staff the latter aspect of his duties is purely hypothetical.

Interview 11
Region of Tuscany. Head of the air quality protection Unit

Field of competence of the Unit

This Unit forms part of the Environment Service of the Tuscany Regional Councillor's Office.

The Unit is concerned with the following: formulating the technical aspects of regional laws and standards; coordinating and directing the activities of the local authorities and local health units in respect of air quality protection; processing and issuing authorizations for the emission of gaseous wastes from industrial plant; carrying out studies and research for the finalisation of regional rehabilitation and conservation plans.

Tasks of the Head of Unit

The Head of Unit is responsible for directing and guiding the Unit's activities within the context of regional programmes. He is also responsible for relations with local authorities and the Ministry of the Environment, and for the Unit's technical and training activities. The Head of Unit has 17 years' experience in the sector, holds a degree in chemistry and is graded at Level IX. He enjoys a high degree of autonomy, devoting 80 % of his own activity to the area in question.

Organisation of the Unit

The Unit appears to be seriously understaffed in relation to its functions. It has one administrator, one assistant administrator and two technical specialists. The administrator, who has 12 years' experience and is graded at Level VII, is concerned with official acts and is also responsible for the secretarial staff. The assistant administrator and the two technical specialists are graded at Level VI; the former is a graduate, with ten years' experience, while the technical specialists, who hold upper secondary school certificates, have two and three years' experience respectively. These personnel are concerned with the examination of technical questions and applications for authorizations; they also formulate the technical content of official acts.

The staff enjoy only a limited degree of autonomy. They require an overall knowledge of the public service organisation in respect of environmental pollution.

	The regions		
Case 6	Tasks	Skills & Competences	Occupational Profiles
Policy-making	**INCORPORATION** of national directives **ISSUE** of implementing decrees **ENSURING THE CONSISTENCY** of activities in regard to the establishment of air quality standards **COORDINATION** of the administrative activities of the provinces in regard to air pollution **SITING** of monitoring stations **MANAGEMENT** of air pollution monitoring networks **ELABORATION** of specific rehabilitation plans	**KNOWLEDGE** of the relevant legislative provisions **CAPACITY** for coordination & supervision **SPECIALISED** technical & scientific knowledge	10. **HEAD** of Air pollution, noise & vibration Unit 11. **HEAD** of air pollution Section
Research & Consultancy			
Inspection & Control			
Information & Guidance			

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Case 7 - The Provinces

The field of competence of the provincial authorities is laid down by Law 142/90 and DPR 203/88.

Under Article 14 of Law 142/90, the Provinces have powers in relation to the control, regulation and inventorying of pollutant atmospheric emissions. Under DPR 203/88, the provincial authorities are given the task of drawing up an inventory of atmospheric emissions in their respective territories.

All industrial establishments (whether existing or under construction) must apply to the provincial authorities for authorization in respect of the emission of gaseous wastes. Applications must be accompanied by a technical report describing the production process, and the type and quantity of emissions. The report must be validated by a registered expert in the field in question. Under Article 31 of Law 10/91 the provincial authorities have the task of checking the efficiency of heating installations in municipalities with less than 18 000 inhabitants.

The activities of the provincial authorities are administrative in nature.

Provincial governments comprise various services; among these is the Air Quality Service.

Training

The personnel of the service under study have participated in courses organised by the Environmental Health Laboratory of the National Health Institute. The courses were judged to be interesting and useful but difficult to follow, having been designed for a higher level.

Interview 12
Province of Rome. Head of Air Quality Protection Service

Field of competence of the Service

The Service issues authorisations for the emission of pollutants to the atmosphere and checks technical reports and their correspondence with reality. The province has been empowered to issue authorisations by the Lazio region since last March; up to now about 30 have been issued.

Air quality control is effected through a network of monitoring stations, which is as yet incomplete (only four stations are operational). Monitoring is at present confined to primary pollutants but there are plans to extend it to cover secondary pollutants also. In addition, pollution caused by motor vehicles is monitored through the use of diesel opacimeters.

The Province runs a consultancy and information service, which is available to the public on certain days.

There are plans for an information campaign regarding air quality in the industrial zone on the outskirts of the capital, to be conducted by a mobile unit, and the use of opacimeters throughout the Province; an inventory of pollutant emissions (the related forms have already been prepared), aimed at the improvement of air quality, is also planned.

One of the monitoring stations is operated in conjunction with the National Research Council. The latter supplies the necessary skilled personnel (one technical specialist, who is a graduate, one technician and two grant-holders), while the Province provides the technical equipment. This monitoring station is operated in accordance with the provisions of a DPCM issued in 1982. The other three stations are operated in conjunction with the PMP.

The Province collaborates with a Rome local health unit as regards the monitoring of pollutants (e.g. lead dusts) at certain localities in the city.

The provincial government has no internal rules; however, the Air Quality Service is seriously understaffed.

The Service has a staff of eight, although 30-35 are needed including at least five legal specialists. At present the Service calls on the provincial police (5-6 officers) for surveillance tasks. There is a need for skilled personnel familiar with the questions involved in authorization procedures, whether graduates, chemical technicians or staff trained on the job. As a result of understaffing, personnel regularly fulfil tasks properly belonging to higher grades. There is no system for the evaluation of services provided, nor any system for rewarding such services.

Tasks of the Head of Service

The Head of the Air Quality Service first became involved in environmental protection at the Health and Preventive Medicine Laboratory where he worked for six years. He holds a degree in industrial chemistry although no particular degree or specialisation is required for the post. He is graded at Level IX.

Apart from his administrative duties (10), the Head of Service has the task of coordinating and supervising authorization activities and is involved in providing information for the public. Part of his time is devoted to authorisation procedures.

Organisation of the Service

The Service has two Level VII officials, both of whom hold degrees - one in law and the other in chemical engineering. There is no specific division of tasks but an attempt is made to use the skills of each to the best advantage.

Two other staff members hold certificates in surveying and electronics respectively, but neither of them have specific experience in the field in question. There are also two assistant technicians graded at Level IV, who maintain the monitoring stations, and a secretary.

The degree of autonomy enjoyed in the performance of the various tasks is determined by the constraints attaching to the procedures in question. The time devoted to activities relating to air pollution is mainly determined by the volume of administrative activities. The unit's staff do not possess an overall view of the functioning of the public service in respect of atmospheric pollution.

Interview 13
Assistant Technician assigned to the monitoring stations

The interviewee obtained his post three years' ago, following a training job with the Head of Service. Specific experience - rather than formal qualifications - is indispensable for the tasks in question. This occupation is not yet recognised officially and is not provided for in the internal rules.

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(10) In this connection, the Head of Service recently submitted a proposal for an establishment plan, stressing the need for graduates in industrial chemistry since this qualification is required for the signing of analytical reports.

Tasks of the Interviewee

The interviewee's tasks in relation to the air pollution monitoring network involve changing the filters every 24 hours, carrying out regular maintenance work, reporting any discrepancies and making the necessary adjustments after consultation with the Head of Service. The procedure entails the completion of a form relating to two sets of parameters, one for analysis and the other to check the efficient functioning of the installation.

The three stations have equipment which is similar but not identical, there being differences in the degree of technical sophistication.

It is planned to use the same personnel for the control of diesel pollution through the use of opacimeters and preventive activities using a mobile unit.

	The Provinces		
Case 7	Tasks	Skills & Competences	Occupational Profiles
Policy-making	**ISSUE** of authorisations for the emission of gaseous wastes by industry **MANAGEMENT** of the monitoring network		
Research & Consultancy		**KNOWLEDGE** of the revelant legislative provisions	12. **HEAD** of Air Quality Service
Inspection & Control	**POWERS** regarding the emission of gaseous wastes by industry: - enforcement notices; - revocation of authorisations; - prior checks regarding authorisations. **CONTROLLING** the efficiency of heating plants in municipalities with less than 18 000 inhabitants **COMPILATION** of an inventory of atmospheric emissions at provincial level	**SPECIALISED** technical & scientific knowledge **KNOWLEDGE** of monitoring techniques **CAPACITY** for coordination & supervision	13. **ASSISTANT TECHNICIAN,** maintenance of air pollution monitoring stations
Information & Guidance	**PUBLIC** consultancy & information service		

Case 8 - The Multizonal Preventive Measures Office(PMP)

The PMP is a second-level technical agency forming part of the national health system. Its function is to check compliance with air quality standards in accordance with a DPCM issued in 1983 and control emissions from industrial establishments under the provisions of DPR 203/88.

The PMP acts at the request of the health authorities or the magistrature. It collaborates with the National Health Institute, the Ministry of the Environment, the National Research Institute for Energy and the Environment and the National Research Council in respect of analytical methodology.

The PMP comprises various departments: environment, biotoxicology, enlosed environments, and the Interzonal drinking water service. The "environment" Department comprises three laboratories, respectively for the analysis of air quality standards, the control of atmospheric emissions, and a biochemistry laboratory for the analysis of surface waters.

The Department under study is seriously under-staffed, since the establishment plan provides for 25 graduates while the unit has only five. The PMP plans to recruit graduates in chemistry, biology, physics and meteorology, and holders of technician's certificates in chemistry and electronics.

Career advancement is through competitive examinations. The Head of the PMP and the heads of its respective Departments and laboratories must be graduates. Laboratory work is carried out by laboratory officers (who are graduates) and their assistants, who must hold upper secondary school certificates. The Head of the PMP, like the Department heads, is graded at Level X, while laboratory officers are graded at Level IX. The PMP also employs inspectors, but only for the Toxicology Unit.

The occupational profiles for chemists provide for three levels: chief chemist, scientific officer, and assistant chemist.

Job titles correspond to actual functions.

Training

Training provision is seriously inadequate. Updating courses are provided, but at present training problems are resolved through contacts with the National Health Institute. The monitoring network is already established but the related personnel have not yet been trained.

Interview 14
Head of the PMP and the Environment Department (11)

Field of competence of the Department

To ensure the quality of the monitoring network the Department approves the equipment used; it also analyses and processes data on air quality standards and analyses and controls atmospheric emissions from industrial establishments.

Organisation of the Department

The Department's activities are entirely devoted to problems relating to atmospheric pollution.

Under a decree issued in 1988 a new monitoring network was set up comprising nine stations which were to be operational by the end of the year. Due to a lack of funds, however, the network is still only partly operational. The monitoring network set up earlier was able only to record data relating to a single pollutant; the new system, however, is able to detect a number of pollutants, e.g. carbon monoxide, nitrogen oxides, ozone, methane and other hydrocarbons, and dusts. The system also includes a meteorological centre for each Province. The three monitoring installations in operation have been validated by the Regional Committee and are run by the PMP; others are being set up, but have yet to obtain official data validation.

The personnel operate with the maximum autonomy permitted by their tasks. All staff should have an overall knowledge of the organisation of the public services in relation to atmospheric pollution.

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(11) The Head of the Environment Department is also the Deputy Head of the PMP; he fulfils the related tasks but does not yet have the job title.

Interview 15
Chemist (Level IX), Head of the Atmospheric Pollution Control Laboratory

Tasks of the Interviewee

Management of the air pollution monitoring network, including maintenance and data processing, for Rome and the Rome Province. Coordination of the operational group.

The interviewee holds a degree in chemistry and has held this post for a year; previously he worked for the clinical analysis laboratory of a Rome local health unit.

Organisation of the Unit

The monitoring network comprises fixed installations distributed throughout the area at strategic points selected on the basis of information supplied by the National Health Institute in accordance with the legislation in force.

All the monitoring stations (15 in Rome and throughout the province) are linked to a provincial centre where the data are processed. The system has recently been computerised; the work was carried out by a private firm commissioned by the region, which supplied both the hardware and the software. The training plan for the personnel has not yet been launched, however.

The operational group has three members; since the installation of the computerised system was completed, one of the them - who had pursued data processing studies for personal reasons - has headed the data processing centre. The group is responsible for checking the equipment. This is done using mixtures; a standard mixture of known content is analyzed, and if the correct result is not obtained adjustments are made to the equipment.

Interview 16
Industrial gaseous wastes control Officer

Tasks of the Interviewee

The interviewee holds a chemical technician's certificate and is graded at Level VIII. Emission control and analysis is carried out through on-the-spot checks and pollutant sampling. The procedure is designed to determine the accuracy of technical reports; personnel are accompanied by PMP inspectors who have powers of enforcement.

	The Multizonal Preventive Measures Office (PMP)		
Case 8	Tasks	Skills & Competences	Occupational Profiles
Policy-making			
Research & Consultancy		**KNOWLEDGE** of the revelant legislative provisions	14. **HEAD** of the PMP & its Environment Department
Inspection & Control	**ANALYSIS** of air quality standards **CONTROL** of industrial gaseous waste emissions **INTERVENTION** with police assistance in the event of non compliance	**SPECIALISED** technical & scientific knowledge **KNOWLEDGE** of monitoring techniques **KNOWLEDGE** of laboratory methodology **CAPACITY** for coordination & supervision	15. **CHEMIST** responsible for laboratory work relating to atmospheric pollution 16. Industrial gaseous wastes control **OFFICER**
Information & Guidance			

Case 9 - The Local Authorities and Local Health Units

Three areas showing different characteristics and thought to be representative were selected for study.

The first Rome local health unit covers a heavily industrialised area with high population density. Pollutant emissions arise from both motor traffic and the numerous industrial establishments.

The second Rome local health unit, on the other hand, covers a residential area with a low population density and very little industry (the crafts sector accounts for most of the activity). Most pollutant emissions, therefore, are due to motor vehicles and heating installations.

The third local health unit under examination is in the Viterbo province and covers an area which includes several municipalities of differing characteristics. For the most part, it lies along the coast and has a flourishing tourist activity during the season.

The health units in question collaborate on an institutional basis with their respective provinces and with the PMP.

The tasks of the health units as regards atmospheric pollution are laid down by DPR 203/88. In the Lazio region the health units have general surveillance tasks. In the context of authorization procedures, the units supply information to their respective local authorities regarding the area surrounding any potential new establishment, but not as regards the type of pollutants. They are also required to submit technical reports to the provinces on industrial establishments.

Under Law 833/78 public health services were established in the context of the local health unit system. In application of this law at regional level, these services were made responsible for preventive medicine.

Under Law 48/89, the region delegated the task of monitoring atmospheric pollution to the province.

General understaffing was noted in the public health services under examination. The legal status of health unit employees is defined by DPR 761.

Career advancement is by competition, on the basis of qualifications and seniority.

The Head of the Public Health Service must hold a degree in medicine and possess either a background in public health and preventive medicine or the requisite seniority. The post is graded at Level XI; technical personnel working in the environment sector also hold degrees in medicine but are graded at Level IX.

For access to Level X, either a background in public health and preventive medicine or at least five years' service at the lower level is required.

For the post of health inspector, or chief health inspector category I responsible for surveillance activities, an upper secondary school certificate in chemistry, industrial chemistry or surveying is required under the new regulations. The inspectorate comprises three levels: Chief Health Inspector, Coordinating Health Inspector, and Inspector. In practice the distinction between these levels is hierarchical, there being little difference in the tasks performed. It is not yet clear whether, in fulfilling their assigned tasks, the personnel in question possess police powers.

Inspectors must participate in the implementation of work programmes and other measures in accordance with directives received; they carry out checks, analyses and laboratory work for the unit to which they are assigned; give effect to the measures provided for in the work programme; report to the coordinator the results of the activities undertaken; and engage in teaching and self-instruction activities. They are responsible for the fulfilment of their tasks within the context of the services and functions specified by law.

Attendance at updating courses is obligatory. Training courses for both graduates and inspectors have been launched by the Lazio region.

Special leave is rarely granted but expenses are reimbursed. In theory, every local health unit has a training office; in practice, training is provided at regional level by the regional Councillor's Office for training. In this connection, a series of problems have been encountered due to the need to cover the wide variety of skills involved in the activities of the local health units.

Training in the preventive measures services is provided indirectly by the regional Councillor's Office for Health and Environmental Health.

In the public health services, questions regarding air pollution come under the environment section.

Field of competence

Overall surveillance and control activities. Checking compliance with the legislation in force, whether on a programmed basis on the initiative of the service, in response to reports or in relation to new industrial establishments.

The priority tasks of the public health services - apart from activities in connection with the issue of authorisations - are control and surveillance activities, and the issue of technical and technico-legal opinions in regard to preventive measures.

Other tasks include checking, during the authorization procedure relating to a new industrial establishment, that the operator has submitted an application to the province for permission regarding the emission of gaseous wastes; checking to ensure that existing establishments have fulfilled their obligations under DPR 203/88; responding to reports; responding to requests from public authorities (for example, submitting an opinion at the request of the mayor); preparing reports (technical opinions) at the request of the Province.

Technical opinions issued by the health units are not binding in law but merely advisory. Under DPR 203/88, the evaluation of emissions from industrial plants is not within the field of competence of the public health services; however, the latter are required to submit reports on the state of the environment.

The public health service under study comprises the following Sections: environment, foodstuffs, health surveillance, and the prevention of infectious diseases.

Training

Periodic updating is provided regarding the introduction of new legislation. The health unit General Affairs Office sends out circulars summarising all the European, national and regional legislative activity which concerns the health unit's various services. For example, the last circular gave complete information regarding the incorporation into law of EEC legislation on exposure to metallic lead, noise, etc. The region is preparing training courses for all levels.

Seminars are planned, to be arranged by the head of the section in question, on the subject of the correct implementation of environmental legislation. With the help of outside consultants, a thorough study will be made of legislation introduced in the past two years. The ultimate aim is to lay the foundations for wide-ranging but homogeneous action throughout the area concerned.

Interview 17 (A)
Head of Environmental Health Section: Public Health Service, Local Health Unit RM3

Organisation of the Structure

The public health service comprises four sections, one of which is devoted to environmental health. The Service has nine officials with police powers. The environmental health Section consists of two doctors of which the most senior is the Head of Section. There is no difference in their tasks. Whenever new legislation is introduced concerning the sector in question, the Head of Section provides explanatory notes regarding its correct implementation.

The Head of Section is graded at Level IX, is a specialist in public health and obtained his post through a competition. Previously he worked in the industrial medicine sector as a management advisor. His assistant is at present absent, and no replacement is to be provided in the immediate future. An establishment plan for the entire service has been approved, providing for the recruitment of graduates with a view to increasing the number of technical and scientific personnel (e.g. doctors, physicists, chemists and biologists - six new personnel in all).

The grades accorded to staff do not correspond to jobs performed; for example the Head of Section is graded at Level IX, and not X as provided for.

The degree of autonomy enjoyed is limited not only by legislative constraints, but also by the need for a very small staff to cope with an excessively high workload.

Ninety percent of the time is devoted to activities in connection with authorization procedures regarding pollutant emissions by industrial plants, and reports - most of which relate to air pollution.

For the fulfilment of the tasks involved, an overall knowledge of the organisation of the public services in relation to air pollution is required.

Interview 17 (B)
Head of the Environment Section: Local Health Unit RM7

Tasks of the interviewee

As regards authorization procedures, the Head of Section evaluates applications in terms of the completeness of the information supplied and compatibility with the provisions of the relevant legislation. Surveillance activities concern existing establishments and are always designed to determine compliance with the law.

There is no clear differentiation between the tasks of the section Head and his assistant (a doctor) since the same procedures are involved; however, the former defines priorities and supervises the work of his staff.

Organisation of the structure

The health unit under study provides a consultancy and information service to the public.

The Environment section staff consists of the Head of Section, his assistant and two administrative personnel. The section Head holds a medical degree and specialises in public health and preventive medicine; he is graded at Level IX and worked previously in the health unit's Industrial Medicine Section. His assistant is also a doctor specializing in public health and industrial medicine, and is graded at Level IX. The entire service has only two inspectors, although the health unit's establishment plan calls for 14.

The degree of autonomy enjoyed by personnel is theoretically greater for the higher grades; in practice, however, it is subject to constraints due to staff shortages. The need for an overall knowledge of the organisation of the public service in respect of environmental pollution is directly proportional to hierarchical rank.

Interview 17 (C)
Head of Public Health Service, Local Health Unit VT2

Field of competence of the structure

The province of Viterbo has drawn up a list of industrial establishments which have applied for authorization in respect of the emission of pollutants. In this connection the authorities have requested the health unit under study to supply a detailed map showing all the industrial establishments in the area concerned to determine their compliance with legislation in force.

Tasks of the Head of Service

The Head of Service is a doctor specialising in public health and preventive medicine; he began his career as a grant holder at the Faculty of Industrial Medicine of Perugia University. He then became an assistant attached to the public health service of a local health unit, and obtained his present post through a competition.

Given the small number of personnel, their tasks are not differentiated. The Head of Service is responsible for supervising and coordinating the activities of his staff.

Organisation of the service

The service which, as in the other two cases examined, comprises various sections, has the following personnel: the Head of Service (a doctor); two assistants (both doctors); a biologist; and three category I inspectors, one of whom is concerned with housing conditions. The establishment plan provides for more than double the present number of personnel. Staff shortages were also noted in the supporting services.

Questions relating to environmental pollution are the concern of one of the doctors and the three health inspectors. Graduate personnel are concerned with rehabilitation measures and pollution prevention, while the inspectors are responsible for compliance control through on-the-spot checks.

In view of staff shortages, no systematic programming of preventive measures is possible. The unexpected is the norm, and enforcement measures are frequently required.

The grades accorded to staff members do not correspond to their actual functions. The degree of autonomy enjoyed is limited by staff shortages and a lack of infrastructure. In the air pollution sector the amount of time devoted to procedural work is very limited. The aim is to standardize technical reports, and a flexible and practical evaluation report form is about to be published.

Interview 18 (A)
Chief Health Inspector, Local Health Unit RM7

Tasks of the interviewee

Surveillance. The Chief Inspector carries out on-the-spot checks to ensure compliance with the legislation in force and detect cases of non-compliance; he is empowered to issue infringement notices or, in more serious cases, to institute legal proceedings.

He is available to the public for information and advice for four hours per week spread over two days.

The interviewee holds a technician's certificate in mechanical engineering and is graded at Level VII. He has 20 years' service and is a former sanitary inspector. He enjoys a high degree of autonomy within the limits imposed by hierarchical constraints. Priorities are discussed but generally speaking are defined by the Head of Section; in practice, however, the inspector takes the necessary decisions on the basis of his experience.

The average time devoted to air pollution questions amounts to one or two hours daily.

Interview 18 (B)
Category I Inspector, Local Health Unit VT2

Tasks of the interviewee

Surveillance and control. The interviewee's activities relate mainly to enforcement rather than preventive measures. Technical reports are not submitted in writing but are given verbally to the Head of Service, with whom strategy is discussed. Activities are always aimed at rehabilitation; legal proceedings are often involved.

The interviewee was recruited in 1978 as a sanitary inspector for one of the municipalities now within the jurisdiction of the local health unit. He holds an upper secondary science school certificate, although for his original post a lower secondary school certificate would have been sufficient.

Since last May he has devoted part of his time to the preparation of an evaluation report form relating to air pollution deriving from industrial establishments (focusing on new installations). He has also prepared an up-to-date catalogue of all the applicable legislation.

The degree of autonomy he enjoys is limited, priorities in most cases being specified by the Head of Service. Sometimes it may happen that he is unable to fulfil an assigned task due to the need to deal with unforeseen events.

	Local Health Units (USL)		
Case 9	Tasks	Skills & Competences	Occupational Profiles
Policy-making			
Research & Consultancy			
Inspection & Control	**CHECKING** compliance with legislation in force **CHECKING** to ensure that industrial establishments have applied for authorisation to discharge gaseous wases **EVALUATION** of technical reports **RESPONSE** to reports **APPROPRIATE MEASURES** in cases of non-compliance	**THOROUGH** knowledge of the relevant legislation **SPECIALISED** technical & scientific knowledge **CAPACITY** for coordination & supervision	17. **HEAD** of Public Health Service/Head of Environment Section 18. **HEALTH INSPECTOR** responsible for Surveillance
Information & Guidance			

CHAPTER 5

ACTIVITIES AND OCCUPATIONAL PROFILES

5.1 TASKS IN RELATION TO GROUPS OF ACTIVITIES/FUNCTIONS

The table below shows a breakdown of the various functional responsibilities by groups of activities and tasks, based on an analysis of the occupational profiles identified in the course of the survey.

A. Policy-making

A.1 Legislative provisions relating to plant, as regards:

- a. more stringent limit values in special cases;
- b. minimum and maximum values for pollutant emissions;
- c. methods of sampling and analysis;
- d. the best available technologies;
- e. prevention, control and rehabilitation;
- f. implementing provisions.

A.2 Authorisation of the construction of thermal power stations and refineries.

A.3 Incorporation of European and national directives.

A.4 Ensuring the uniformity of action taken.
A.5 Coordinating administrative activities in respect of air pollution.
A.6 Operation of monitoring networks.
A.7 Siting of monitoring stations.
A.8 Formulation of rehabilitation plans.
A.9 Issue of authorisations in respect of atmospheric emissions by industry.

B. Research and consultancy

B.1 Transmission of opinions and proposals to government agencies regarding:
  a. authorisations in respect of plants;
  b. the issue of enforcement notices and warnings;
  c. the revocation of authorisations;
  d. investigations.
B.2 Research and consultancy services for the State, regions and local health units.
B.3 Monitoring and analysis of pollutants in cases of emergency.
B.4 Pollutant distribution modelling.
B.5 Study of surveillance procedures.
B.6 Study of atmospheric pollutants.
B.7 Study of preventive measures strategies.
B.8 Inventorying and cataloguing of pollutants.
B.9 Development of monitoring methodologies.

C. Inspection and control

C.1 Surveillance activities.
C.2 Enforcement notices.
C.3 Warnings.
C.4 Revocation of authorisations.
C.5 Plant closures in cases of non-compliance with limit values.
C.6 Checking conformity with the terms of authorisations.
C.7 Analysis and control of air quality standards, involving:
  a. maintenance of technical equipment;
  b. data processing and analysis.
C.8 Analysis and control of industrial wastes vented to atmosphere.

D. Information and guidance

D.1 Preparation of periodic reports.
D.2 Information for the public.
D.3 Guidance for those involved in vocational training.
D.4 Guidance on technico-legal questions.
D.5 Environmental education.
D.6 Training of operational personnel.

5.2 CLASSIFICATION OF OCCUPATIONAL PROFILES

Details of the occupational profiles identified in the survey are given below in tabular form. In case where the same function was fulfilled by more than one interviewee the resulting information is condensed and presented on a single sheet.

The following details are given in each case:

* code references to the tasks listed above;
* the activities involved;
* the operational phase (e.g. planning, implementation, control) with which the interviewee is concerned;
* the degree of autonomy enjoyed;
* the proportion of the interviewee's time devoted to atmospheric pollution questions;
* collaboration with other organisations;
* the qualifications required for the post;
* the interviewee's participation in training activities.

INTERVIEW 1

ORGANISATION	Ministry of the Environment
POST HELD	Deputy Head of Division I, DG for Environmental Impact Assessment: EIA Service
TASKS	D1; D2
CORE TASK	EIA authorisation procedures
ACTIVITIES INVOLVED	Authorisation procedures; organisation and management; contribution to Report on the State of the Environment
OPERATIONAL PHASE	Implementation (investigative stage of authorisation procedures)
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With outside agencies, especially the National Health Institute, the ISPeSL, the CNR, and the regions and local authorities
QUALIFICATIONS	Graduate
TRAINING ACTIVITIES	Updating through independent learning; participation in conferences; participation in outside training courses

INTERVIEW 2

ORGANISATION	Ministry of the Environment
POST HELD	Head of SIAR Service (Atmospheric and Acoustic Pollution and High Risk Areas)
TASKS	A8; B1a
CORE TASK	Analysis of emissions from fixed installations
ACTIVITIES INVOLVED	Administrative procedures; organisation and management
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the National Health Institute, the ISPeSL, and the Ministry of Industry
QUALIFICATIONS	Graduate
TRAINING ACTIVITIES	Updating through independent learning; participation in conferences

INTERVIEW 3

ORGANISATION	Ministry of the Environment
POST HELD	Acting Director, Division II of the DG for Environmental Impact Assessment: General Affairs and Public Information
TASKS	D1; D2; D5
CORE TASK	Public information
ACTIVITIES INVOLVED	Administrative procedures; organisation and management; multimedia campaigns to awaken public opinion
OPERATIONAL PHASE	Programming
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the Ministries of Public Works, the Cultural Heritage, the Merchant Marine, Education and Defence; also with the CNR, the National Statistical Institute and private service companies
QUALIFICATIONS	Graduate
TRAINING ACTIVITIES	Updating through independent learning; participation in conferences

INTERVIEW 4

ORGANISATION	Ministry of Industry
POST HELD	Technical Specialist, DG for Industrial Production
TASKS	A3a; A2; B1a
CORE TASK	Submission of opinions at the request of the Ministry; incorporation of legislation on cross-frontier air pollution over long distances
ACTIVITIES INVOLVED	Analysis of acts and laws; examination of legislative provisions and parliamentary and ministerial initiatives; authorisation procedures; the issue of decrees and other instruments
OPERATIONAL PHASE	Programming
DEGREE OF AUTONOMY	High
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the Ministries of the Environment and Health and private-sector industrial associations
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Updating by independent learning, and participation in conferences mainly organised by private-sector industrial associations

INTERVIEW 5

ORGANISATION	Ministry of Industry
POST HELD	Head of the support group for the management of the National Energy Plan
TASKS	B1, B9; A1e, A8
CORE TASK	Provision of technical advice relating to air pollution standards
ACTIVITIES INVOLVED	Authorisation procedures; official acts; legal counselling; compilation of an inventory of emissions
OPERATIONAL PHASE	Programming
DEGREE OF AUTONOMY	High
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the Ministries of the Environment and of Health; the CIPE, the National Health Institute, the ENEA, the CNR and public-sector industries
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Activities as instructor; updating by independent learning and participation in conferences

INTERVIEW 6

ORGANISATION	The National Health Institute (ISS)
POST HELD	Head of Air Quality Department
TASKS	B2; D1
CORE TASK	Preparation of annual report on research activities; provision of technical advice to local authorities
ACTIVITIES INVOLVED	Analyses; organisation and management
OPERATIONAL PHASE	Implementation
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With universities, the ISPeSL, the CNR, the ENEA, the PMP and local authorities
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Activities as instructor; updating by independent learning, participation in conferences

INTERVIEW 7

ORGANISATION	The National Institute for Preventive Measures and Health and Safety at Work (ISPeSL)
POST HELD	Director, Department for industrial establishments and their environmental effects
TASKS	B2
CORE TASK	Research and consultancy activities for central, regional and local government agencies
ACTIVITIES INVOLVED	Organisation and management; analysis of accident hazards
OPERATIONAL PHASE	Programming and implementation
DEGREE OF AUTONOMY	High
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With universities, the CNR, the National Health Institute and local health units
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Updating by independent learning, participation in conferences, activities as qualified teacher on industrial hazards for universities, the ENI and the National Health Institute

INTERVIEW 8

ORGANISATION	The National Research Institute for Energy and the Environment (ENEA)
POST HELD	Head of Unit for the coordination of activities relating to the world climate
TASKS	B1
CORE TASK	Management and coordination of the activities of a unit providing technical advice to the Ministry of the Environment
ACTIVITIES INVOLVED	Research; analysis; organisation and management
OPERATIONAL PHASE	Programming
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the Ministry of the Environment, local authorities, the National Health Institute, and the CNR; also the ARSI and the TECNE and Baccarini companies
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Updating by independent learning, participation in conferences and study groups

INTERVIEW 9

ORGANISATION	The National Research Institute for Energy and the Environment (ENEA)
POST HELD	Head of Project Unit for preventive measures
TASKS	B7, B8
CORE TASK	Preparation of inventories of air pollutants at national and regional level; development of strategies for the prevention of air pollution
ACTIVITIES INVOLVED	Analysis and research
OPERATIONAL PHASE	Programming
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the Ministry of the Environment, local authorities, the National Health Institute, and the CNR
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Updating by independent learning, participation in conferences and study groups

INTERVIEW 10

ORGANISATION	Lazio region, Office of the Regional Executive Councillor for the Environment
POST HELD	Head of Unit for atmospheric pollutiona, noise and vibration
TASKS	A1a, A3a, A4, A5
CORE TASK	Coordination of the unit's activities and the activities of local authorities
ACTIVITIES INVOLVED	Legal and administrative procedures; organisation and management
OPERATIONAL PHASE	Programming
DEGREE OF AUTONOMY	Average in theory, but in practice limited by staff shortages
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the PMP and local authorities
QUALIFICATIONS	Graduate
TRAINING ACTIVITIES	Updating by independent learning; about to participate in training programme recently launched for senior personnel

INTERVIEW 11

ORGANISATION	Region of Tuscany, Office of the Regional Executive Councillor for the Environment
POST HELD	Head of air pollution section
TASKS	A1e; B1d
CORE TASK	Air quality protection
ACTIVITIES INVOLVED	Legal and administrative procedures
OPERATIONAL PHASE	Programming and implementation
DEGREE OF AUTONOMY	High
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With local authorities
QUALIFICATIONS	Upper Secondary School Certificate
TRAINING ACTIVITIES	Updating through independent learning; attendance at training and updating courses organised from time to time by the region of Tuscany; participation in courses on risk assessment, environmental impact assessment and a course on health considerations in environmental impact assessment organised by the National Health Institute; regular reading of specialised reviews and books; participation in conferences and seminars

INTERVIEW 12

ORGANISATION	Province of Rome, Office of the Councillor for the Environment
POST HELD	Head of Air Quality Protection Service
TASKS	C1, C6, C7; A6, A7, A9; D2, D4
CORE TASK	Coordination and supervision of the activities of the service in connection with the issue of authorisations for the venting to atmosphere of industrial wastes; management of air quality monitoring network
ACTIVITIES INVOLVED	Legal and administrative procedures; evaluation of technical reports; advisory service for the public
OPERATIONAL PHASE	Control and implementation
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the CNR, the PMP and local health units
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Updating through independent learning

INTERVIEW 13

ORGANISATION	Province of Rome, Office of the Councillor for the Environment
POST HELD	Technician responsible for the maintenance of the monitoring Stations (this occupation is not provided for contractually)
TASKS	C7a
CORE TASK	Maintenance of monitoring station equipment
ACTIVITIES INVOLVED	Technical procedures and reports; reporting discrepancies and contributing to their rectification
OPERATIONAL PHASE	Control
DEGREE OF AUTONOMY	Limited
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
QUALIFICATIONS	No specific qualifications required for post; on-the-job training
TRAINING ACTIVITIES	Training job with the Head of Service

INTERVIEW 14

ORGANISATION	Multizonal Preventive Measures Office (PMP), Province of Rome
POST HELD	Head of the PMP and its Environment Department
TASKS	C7
CORE TASK	Coordination and supervision of the activities of the service in respect of air pollution control
ACTIVITIES INVOLVED	Supervision of air pollution monitoring network, equipment approval and data processing centre
OPERATIONAL PHASE	Control
DEGREE OF AUTONOMY	Average
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the local health units, the National Health Institute, and the Ministry of the Environment; also with the ENEA and the CNR for analytical methodology
QUALIFICATIONS	Graduate in science
TRAINING ACTIVITIES	Updating by independent learning

INTERVIEW 15

ORGANISATION	Multizonal Preventive Measures Office (PMP), Province of Rome
POST HELD	Chemist
TASKS	C7b
CORE TASK	Analysis and processing of data. Coordination of operational group
ACTIVITIES INVOLVED	Management of air pollution monitoring network; use of integrated systems; standardised technical procedures
OPERATIONAL PHASE	Control
DEGREE OF AUTONOMY	Limited
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the local health units and municipalities
QUALIFICATIONS	Graduate in chemistry
TRAINING ACTIVITIES	Updating through independent learning

INTERVIEW 16

ORGANISATION	Multizonal Preventive Measures Office (PMP), province of Rome
POST HELD	Industrial gaseous wastes control Officer
TASKS	C8
CORE TASK	Control of atmospheric emissions of industrial wastes
ACTIVITIES INVOLVED	Standardised technical procedures
OPERATIONAL PHASE	Control
DEGREE OF AUTONOMY	Limited
TIME DEVOTED TO AIR POLLUTION QUESTIONS	100%
COLLABORATION	With the police
QUALIFICATIONS	Upper Secondary School Certificate (Science)
TRAINING ACTIVITIES	Updating through independent learning

INTERVIEW 17

ORGANISATION	Local health units RM3, RM7 and VT2
POST HELD	Head of Environment Section
TASKS	C1, C6; D2, D6
CORE TASK	Coordination and supervision of control and surveillance activities; training and information activities
ACTIVITIES INVOLVED	Legal and administrative procedures; preparation of further measures
OPERATIONAL PHASE	Implementation and control
DEGREE OF AUTONOMY	Average; limited by staff shortages
TIME DEVOTED TO AIR POLLUTION QUESTIONS	90% of working time is devoted to authorisation procedures, most of which relate to air pollution
COLLABORATION	With the regions, provinces, local authorities, other health units and the fire service
QUALIFICATIONS	A degree in medicine with specialisation in preventive medicine and health at work, or five years' experience in the previous job are required for this post
TRAINING ACTIVITIES	Updating through independent learning; regular reading of specialised reviews; participation in training courses, whether as teacher or student

INTERVIEW 18

ORGANISATION	Local health units RM7 and VT2
POST HELD	Health Inspector, responsible for surveillance
TASKS	C1, C3, C5; D2
CORE TASK	Surveillance and control of environmental pollution
ACTIVITIES INVOLVED	On-the-spot inspections; enforcement measures; preparation of procedures; public information; administrative procedures
OPERATIONAL PHASE	Control
DEGREE OF AUTONOMY	Limited
TIME DEVOTED TO AIR	100%
COLLABORATION	Informal, with the municipal police and the fire service
QUALIFICATIONS	A chemical technician's certificate or surveyor's certificate are required for the post
TRAINING ACTIVITIES	Obligatory, under DPR 203/88 and WHO rules; participation in training courses on technical and legal questions; entitlement to special leave; one of the two interviewees was attending the obligatory course for environmental and industrial inspectors at the Gemelli Catholic University in Rome

5.3 CONCLUSIONS

The occupational profiles described exhibit common characteristics which may in part be attributed to the fact that the personnel in question are employees of the public service, in which staff relations are governed by specific rules.

Personnel are recruited through public competitions. Career advancement is based on length of service, academic qualifications, internal competitions, etc.

The salient characteristic of public service personnel active in the air pollution sector of environmental protection is their versatility. These personnel possess both technical and legal skills which are combined in different ways according to the function involved. At unit head level, even though the majority of post holders are science graduates the greater part of their working time is devoted to authorisation procedures. The responsibilities involved appear to relate to legal questions and policy-making rather than technical matters; this ambivalence raises problems as regards the classification of the occupational profiles in question.

The organizational structures - especially at central level - appear rigid and strongly hierarchical. The inflexibly fixed career advancement criteria appear to favourstaff members holding administrative posts rather than those with specialised technical skills.

Understaffing is general throughout the sector, leading at times to mismatching between job titles and actual functions.

Despite the strongly hierarchical structure there is no rigid division of tasks; rather, an attempt is made to make the best and most rational use of the particular skills and capacities of each staff member.

Activities involved

The activities involved essentially concern administrative procedures, at all levels and in virtually all the occupations examined. At the upper levels, a capacity for coordination and supervision is also required. Data processing systems are rarely used (for the most part computerization is left to individual initiative).

Operational phase

Most of the personnel interviewed are concerned with the programming or control of an entire operation. Worthy of note is the manner in which the procedure is divided among various sectors and structures in accordance with their respective fields of competence. However, in special situations such as emergencies this differentiation of roles is superseded and task forces or crisis groups are set up.

Degree of autonomy

The degree of autonomy enjoyed is in general greater for those holding posts at the upper levels of the hierarchy. It should be noted that the personnel interviewed work in structures established by legislation; consequently the degree of autonomy enjoyed by individual staff members is limited from the outset by the provisions defining the institution itself. However, autonomy tends to increase in line with the extent to which a technical element is involved in the job in question.

In practice, in the structures examined the degree of autonomy enjoyed by individuals is often dictated by staff shortages.

Time devoted to air pollution questions

In general, the personnel interviewed devoted 100 % of their working time to activities related to the field we are concerned with in this study.

This result, however, was influenced by the composition of the sample, which focused on personnel who by definition were concerned with environmental protection.

It may be noted that in certain cases working time was divided between the three areas - air, water and soil - concerned by environmental protection.

Since for the most part personnel are involved in administrative procedures, a proportion of which relate to authorizations, another aspect which should be noted is that in certain sectors the time devoted to air pollution questions is determined by the volume of legislation produced in this area - which in Italy is considerable.

Qualifications and training

Specific academic qualifications are not always required for access to the various posts.

Training provision is often inadequate, although a widespread and rapidly growing awareness of this problem was noted.

CHAPTER 6

ENVIRONMENTAL EDUCATION AND THE TRAINING SYSTEM

The increasing gravity of successive environmental emergencies, which has aroused public opinion, has given rise - thanks partly to the activities of the environmentalist associations - to the development of an "environment culture".

Through their voluntary work, the pioneers in the field laid the ground work for what were to become the professions of the future.

This movement met with a varying reception from one region to another, and it may be noted that activities in this field are pursued with greater enthusiasm in the north of the country than in the south.

As a result of the development of the new "environment culture" action has begun to be focus on research and experimentation regarding clean technologies rather than on rehabilitation plans.

Strategy in relation to these problems, therefore, tends to be viewed in terms of preventive measures rather than enforcement.

These developments have prompted greater efforts as regards environmental education, combined with calls for a more comprehensive knowledge of the workings of the environment and higher levels of the related skills.

There is no shortage of employment openings in both the public and private sectors, especially as regards the processing of environmental data, the study of rehabilitation plans and the formulation of measures.

6.1 ENVIRONMENTAL EDUCATION IN THE SCHOOL SYSTEM

According to a survey covering all state schools conducted by the Ministry of Education the study of environmental problems is now well established in the school system.

As noted in the "Report on the State of the Environment" (Ministry of the Environment, 1989), ecology questions are well in the lead in this respect; tuition is given in various ways, such as film shows, the distribution of instructional material, visits to exhibitions on environmental themes, and visits to areas of special natural interest. Research activities are also promoted regarding the quality of life, the environmental situation and production processes in students' areas.

On the basis of these studies, standards of behaviour are formulated with regard to such questions as energy saving, the use of recycled plastics and paper, or refuse sorting.

These initiatives tend mainly to concern the early stages of the education process, however.

The sharp divide between the north and south of the country also applies to environmental education, though initiatives of the type described are more common in the major cities.

The subjects most widely studied are those relating to the different types of air, water and soil pollution, while the relationship between man and nature, energy saving and health and the environment come some way behind.

The outside bodies involved in these initiatives in schools were primarily local and regional authorities and environmentalist associations.

The contribution made by the universities and bodies concerned with teacher updating was more modest, however.

6.2 ENVIRONMENTAL TRAINING

Vocational training

Under the provisions of the framework Law 845/78, vocational training is aimed at disseminating the knowledge and skills necessary for the development of the various trades and professions and is open to all who have completed their compulsory schooling.

In respect of financing, a distinction must be made between public and private-sector training activities. In the public sector, training is provided by the State vocational schools (which come under the Ministry of Education), courses run by the regions (which come under the Ministry of Labour), and courses financed by the European Social Fund, the National Funds and other public bodies. In the private sector the financing of training provision is subject to the laws of the market.

In the face of steadily rising demand, training provision in this field is very inadequate in both quantitative and qualitative terms.

At regional level, training provision has tended to concentrate on certain traditional sectors and, as regards content, its development has not kept pace with private-sector training activities. The courses offered do not provide consistent coverage of the various subjects in this field but focus on local problems (e.g. courses are provided for ecology officers, game wardens, nature guides, etc.) and the introduction - especially in agriculture - of techniques with a reduced environmental impact.

Only about 15 % of courses are devoted to water pollution and treatment, air pollution and waste disposal.

Further training needs will arise as a result of the entry into effect of the Law on environmental impact assessment (at present only two courses are offered on this subject, both in the north of the country), the framework Law on protected zones and the progressive implementation of the new rules governing wastes.

Val d'Aosta, Piemonte, Lombardy, Trentino Alto Adige, Emilia Romagna and the Marches organise regional courses for ecology officers, foresters and game wardens. Courses for environmental inspectors are provided for fire service personnel. Courses for alpine guides are offered by the regional offices of the AGAI (Association of Italian Alpine Guides) and in Val d'Aosta, Trentino Alto Adige, Abruzzo and Sardinia; courses for naturalist guides are given in Sicily.

The universities

Throughout the country, universities are introducing innovative courses, branches and sections relating to environmental subjects.

Opinions differ, however, regarding the desirability of introducing new disciplines, branches, or even degree courses, rather than modifying the existing structure.

As regards degree courses, the problem is whether to combine a variety of environmental subjects in a single branch or introduce a course devoted entirely to environmental questions. The degree courses comprising the greatest number of environmental disciplines relate mainly to the faculties of biology, forestry, natural science, engineering, architecture and agricultural science. The study programmes of these latter include disciplines and branches relating to environmental or ecological questions - of a character strongly influenced, however, by students' educational and vocational background.

Degree in environmental sciences

The degree course in environmental sciences is designed to train skilled personnel, providing them with an overall understanding of the environment and the various elements - social, natural, technological and economic - which interact to affect it. The new graduates will require a broad educational base in order to act together as experts in the various areas without losing sight of the problem as a whole. Their tasks will include coordinating research projects, evaluating proposed measures, policy-making and managing environmental services in both the public and private sectors.

The degree in environmental sciences was introduced in 1988. The course entails 28 examinations spread over five years, of which the first two are introductory and the following three comprise two branches: terrestrial (chemistry or biology sections) and marine (oceanography, living and non-living resources, pollution). The number of students is restricted. The University of Venice was the first to open enrolments for this course in 1989; the Universities of Ravenna and Taranto were the next, and next year it will be the turn of Milan and Parma.

In 1989 the Ministry of the Environment catalogued the various five-year degree courses in ecological subjects: soil protection engineering and land -use planning, at the Milan Polytechnic and the Universities of Basilicata (Potenza), Calabria (Cosenza), Ancona, Perugia, Salerno and Udine; forestry engineering at Trento; and town planning at the Faculties of Architecture of the Universities of Venice and Reggio Calabria.

The "Tor Vergata" University, Rome, and the "Tuscia" University, Viterbo, have already called for the institution of new degree courses in environmental sciences.

In addition, Level I university degree courses (the so-called short courses (1)) have been introduced in crop forestry monitoring at Florence University and in ecology and the health assessment of the human environment at the University of Padova. Other Level I courses have already been called for at various other universities.

Research doctorates and specialised post-graduate courses

Research doctorate courses provide an opportunity for specialising in areas of research proper to the faculty in question.

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(1) Recently, an intermediate step between the upper secondary school certificate and the degree, known as the "short course degree", was introduced in Italy. This diploma offers an intermediate qualification level adapted to the needs of the labour market and provides further opportunities for those students who are not in a position to complete university studies.

The research doctorate course in environmental sciences provides advanced training for students of ecology to promote the development of high-quality scientific research on environmental systems and create the skills necessary in the field of environmental protection to meet the requirements of the labour market in both the public and private sectors.

A school of environmental management is at present in the planning phase. A broad spectrum of qualifications will be accepted for entry, ranging from the sciences to the humanities. For most of these courses students will follow a common curriculum, to branch out subsequently according to the specialisation chosen. The fields covered are expected to include the following: environmental chemistry, environmental geology, environmental biology, marine ecology, the ecology of inland waters, soil ecology, the management of natural resources, the management of marine resources, aquaculture, environmental impact assessment, environmental law, environmental economics and environmental education.

6.3 TRENDS AND OUTLOOK

It is hard to arrive at a reliable estimate for the number of personnel active in the environment sector, since there is no generally accepted definition of its limits. The sector is not covered by the ISTAT (Central Statistical Office) classification of occupations, making it difficult not only to determine the numbers currently involved but to estimate future requirements.

There are no official figures, but the number of persons engaged in environmental protection activities in various capacities has been estimated at about 200 000. According to a 1988 CENSIS (Centre for Research on Social Investments) estimate there are 3 028 specialised firms in Italy with a combined turnover of about LIT 3 000 billion. At the same time, the EEC estimates that 500 000 ecology workers will be recruited by 1995. In Italy alone there are likely to be 40 000 new posts for graduate technical experts in the next five years; however, detailed statistics by the Castitalia company (a member of the IRI Group) point to an even more encouraging outlook.

EEC estimates for Italy suggest a need for about 60 000 new personnel to fill civil service posts.

It should be noted that the estimates and forecasts cited above are more likely to be realised if legislative activity in the environment sector continues to develop; this development is in turn dependent on the extent of public awareness of ecology problems and developments in industry and scientific and technological research.

The new experts and what they do

The **ecologist** is concerned with all environmental disciplines, and takes an overall view of the health of the planet; he is involved in pure scientific research and works mainly in the universities.

The **laboratory ecologist** studies nature using laboratory methods; he holds a degree in biology, natural sciences, agricultural sciences or chemistry.

The **field ecologist** is a biologist, geologist or naturalist, and works directly in the field.

The **ecomanager** is responsible for the administrative and economic aspects of the environmental management plans of firms or local authorities.

The **environmental economist** carries out cost-benefit analyses of structural modernisation projects; he holds a degree in economics or engineering.

The **energy manager** is an expert in the econometrics of the energy consumption industry. He designs energy recovery processes. He holds a degree in engineering, physics or chemistry.

Nowadays the **sanitary engineer** acts a pollution prevention expert. He develops new purification filters and processes for the disposal of dusts or toxic substances. Qualified technicians are also involved in the prevention of air, water and noise pollution.

The **alternative energy expert** is a physicist, engineer, chemist or biologist and studies alternative sources of clean energy.

The **data processing expert** develops software for environmental protection. He is a graduate in informatics or engineering.

The **wastes expert** is concerned with all waste disposal systems: discharge, incineration, recycling. He holds a degree in engineering or physics.

The **hydrogeologist** is a naturalist, biologist or chemist. He evaluates changes in the air/water relationship and formulates recovery plans.

Qualified technicians (upper secondary school certificate holders) are also active in this area at operational level.

The **remote sensing expert** keeps watch on environmental safety using high technology instruments and diagnoses the state of health of the principal resources. This sector is growing rapidly and will open up substantial numbers of posts in both the public and private sectors to chemists, biologists, naturalists, geologists, physicists, agronomists and engineers specialising in environmental analysis and the interpretation of data.

The **environmental consultant** must combine many of the skills of the experts listed above. He carries out research on specific subjects for private industry or public institutions and holds a degree in natural sciences, agricultural sciences, forestry, chemistry or biology.

Foresters and ecology officers

The Forestry Service comes under the Ministry of Agriculture and Forests. Parliament has voted a staff increase for the service, which will be expanded from 6 500 personnel as at present to about 8 000 within three years, with an objective of 10 000 in the longer term. Foresters are responsible for the territories of the various regions, three parks (Stelvio, Calabria and Circeo), about 40 nature reserves and two protected zones. The first of a series of competitive examinations will be announced before the end of 1991, to be followed by three others in the coming years. Women will be admitted for the first time (2).

Officials assigned to the conservation of the national heritage are recruited through public competitive examinations open to graduates in agriculture, forestry or civil engineering; foresters (for whom an upper secondary school certificate is required) are also recruited through competitions.

Ecology officers are principally concerned with reporting cases of non-compliance with the provisions of regional environmental protection laws.

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(2) Up to now only women graduates were admitted to the competitive examinations, and then only for posts as officials.

For access to these posts, candidates must follow courses offered by the regional parks administration, the mountain communes or the provincial authorities; they must then pass certain examinations and take an oath before the prefect and a magistrate to become sworn officers.

ANNEX I

THE ORGANISATION AND FUNCTIONS OF PUBLIC SECTOR AGENCIES RESPONSIBLE FOR ENVIRONMENTAL PROTECTION IN ITALY

1.	The central authorities		
	Ministry of the Environment	Ministry of Industry	Ministry of Health
Policy-making	**LEGISLATIVE PROVISIONS** (applicable to all plants): - minimum and maximum values for pollutants; - more stringent limit values in special cases - methods of sampling & analysis - the best available technologies DG for EIA, public information & the Report on the State of the Environment A. EIA Division B. Department for Air Pollution & High Risk Areas	**AUTHORISATION** for the construction of power stations & refineries DG for Industrial Production D. Division XI DG for Energy Sources & Industry E. Support Group for the Management of National Energy Plan	
Research & consultancy	**OPINIONS & PROPOSALS** on: - authorisations (power stations & refineries); - enforcement notices & warnings; - revocation of authorisations; - decrees relating to air quality limit values & guideline values.	**PROPOSALS** for decrees regarding limit values & guideline values	**OPINIONS, CONSULTATIONS & PROPOSALS** regarding: - authorisations; - enforcement notices & warnings; - decrees regarding limit values & guideline values
Inspection & Control	**ACTION** through the police ecology unit	**ENFORCEMENT MEASURES** (power stations & refineries): - warnings; - revocation of authorisations; - plant closures in cases of non-compliance with limit values.	
Information & Guidance	C General Affairs & Public Information Division	**PUBLICATION** of applications for authorisation	

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2.	Research establishments		
	National Health Institute	National Institute for Preventive Measures & Safety at Work	National Research Institute for Energy & the Environment
Policy-making			
Research & consultancy	**THE RESEARCH & ADVISORY** activities for the central government, regions & local health units F. Environmental Health Laboratory Air Quality Department	**RESEARCH & ADVISORY** activities for the central government, regions & local health units G. Department for Industrial Establishments & their Environmental Effects	**RESEARCH & ADVISORY** activities for the central government, regions & local authorities Energy, environment & health Department H. Coordinating unit for activities regarding the world climate Preventive measures unit
Inspection & Control			
Information & Guidance			

3.	The regions and local authorities		
	Regions	Municipalities	Provinces
Policy-making	**AUTHORISATION** (except for power stations & refineries): - for the construction of new plant; - for modifications to existing plant LEGISLATIVE PROVISIONS regarding: - air quality limit values; - emission limit values; - more stringent limit values in special cases. I. Councillor's Office for the Environment or Public Health Air Pollution Department	**BUILDING PERMITS** for the construction of new plant (except for power stations & refineries)	L. Councillor's Office for the Environment Air Quality Protection Service
Research & consultancy	**OPINIONS** (for the Ministry of Industry) on the construction of power stations & refineries **MONITORING** of pollutants & emissions Regional Committees on Air Pollution	**OPINIONS** (for the regions) on authorisations for new plant	
Inspection & Control	**POWERS** regarding: - enforcement notices; - warnings; - revocation of authorisations (emissions exceeding legal limits) - prior checks regarding authorisations	N. Local health units: public health & environment services Provincial Committees Fire Service M. Multizonal Offices & monitoring networks POWER of surveillance, access to plants for control & monitoring purposes	
Information & Guidance	**PUBLICATION** of the terms of enforcement notices & authorisations		

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ANNEX II

QUESTIONNAIRE CHECKLIST

SECTION 1 - THE INSTITUTION

1. Name, address and position of interviewee

2. Which of the following functions are fulfilled by your organisation?
   * Policy-making
   * Research and consultancy
   * Inspection and control
   * Information and guidance

3. Which is/are the most important?

4. Under which laws was your institution established?

5. Within the frame of reference of the study (air pollution and climatic changes) which activities fall within your institution's specific field?

6. With which other public and/or private institutions do you collaborate and what type of relationship do you have with them?

7. How is your Ministry/institution/agency organised? (Give details of the departmental structure, divisions, laboratories, offices, etc.)

SECTION 2 - THE DEPARTMENT

8. In respect of your department, what size of staff is provided for in the internal rules? (Give details of staff shortages if any, and list the skilled personnel lacking)

9. What activities are carried out by your department?

10. What are your specific tasks?

11. For each job in your department, kindly indicate the related grade and the qualifications and/or experience required.

12. Kindly describe the decision-making procedure in your department.

13. Are there any specific guidelines applying to your activities? (If so, give details)

14. To which activities do you devote the most time?

SECTION 3 - PERSONAL PROFILE

15. For how long have you worked in this institution and this department?

16. For how long have you held this particular post?

17. What previous experience have you?

18. What are your principal tasks?

19. What degree of autonomy do you have and in what circumstances would you need to refer to a senior staff member?

20. What proportion of your time is devoted to activities relating to air pollution and climate change?

21. How would you rate your level of job satisfaction?

22. Does your job sometimes bring you into conflict with others? (If so give details)

23. What degree of commitment do you have to environmental protection issues?

24. Have you participated in training courses? (If so, give details: duration, content, venue)

CEDEFOP - European Centre for the Development of Vocational Training

Occupational structures and profiles in Italy in the field of environmental protection in the public service sector with reference to air pollution control
Virgilio Mannocci, Simona Marcantonio, Claudio Stanzani

CEDEFOP panorama

Berlin: CEDEFOP - European Centre for the Development of Vocational Training, 1994

1994 - 124 pp. - 21,0 x 29,7 cm

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CEDEFOP

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As part of comparative research into qualifications in the area of environmental protection studies were drawn up of occupational profiles in public service in a number of Member States (limited to the wide area of air pollution control). The studies on the United Kingdom, Germany and Italy have already been published in the "CEDEFOP Document" series. The English translation of the Italian report now appears in the new series called

CEDEFOP panorama

In this project the qualification structures and the main occupational profiles and their areas of application were examined on the basis of empirical surveys for four main operational areas of public service: "Political decision-making", "Research and Consultancy", "Supervision and Control" and "Information and Publicity". On account of the increasing number of standard provisions in environmental protection at both national and Community level there is a noticeable quantitative and qualitative increase in the demands placed upon the occupations and in the competences required.

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National report